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ON THE

REPTILES AND BATRACHIANS,

By SAMUEL GARMAN.

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INTRODUCTION.

Reptiles and Batrachians.

The Reptiles and Batrachians belong to what are commonly called the Cold-blooded Vertebrates. This name is applied because the heat-producing capacity of their bodies is so low as to render them very susceptible to thermal variation in the surrounding air or water, and unable to maintain any standard temperature. In Batrachia that breathe by means of gills, the small amount of heat the body is capable of producing is limited by the amount of oxygen in the water. A heart in which ventricles or atria are more or less incompletely separated mixes venous with the arterial blood supplied the tissues of lung-bearing Reptiles and Batrachians; and thus, in consequence of partial oxygenation, their heat-producing capacity is reduced. Animals of these classes are, to a considerable extent, dependent on external heat; they are more active during the warmer portions of the season or of the day. During the winter of the temperate zones or the dry season of the tropics they are comparatively inactive.

The Turtles, Crocodiles, Lizards, Amphisbaenians, and Snakes are Reptiles. They are hatched or born with the shape of the adult, breathe by lungs, and generally are covered by a skin the outer layers of which are folded so as to resemble scales. The Batrachians include such as the Toads, Frogs, Salamanders, Newts, Sirens, and Cæcilians. Nearly all of them breathe and progress like fishes during the earlier portion of their existence, and the majority go through a metamorphosis, taking on the form of the adult and breathing by lungs later in life. They are without the scale-like folds of the Epiderm.

From the Turtles to the Snakes of the one, and from the Frogs to the worm-like Cæcilians of the other of these classes, there is a great diversity of forms and habits. In all the intelligence is of a low order. Commonly one or more of the senses is feebly or not at all developed. Many are slow in growth, and live to great ages. Most are tenacious of life, and able to do without food or drink for long periods. The greater portion are harmless; the exceptions are such as the Crocodiles, the few venomous, and a few large non-venomous serpents. Depending so much upon small vertebrates and insects for food, the majority are important checks upon the increase of the enemies of garden and field. Occasionally farmers recognize the compensation received for protecting and gathering these despised creatures; more often, unfortunately, in prejudice and ignorance of the friendly habits, they exert themselves in favor of extermination. Even the lizards that dart about on the bark, branches, and leaves in search of grubs, borers, and other pests of the orchard, are included in the general massacre. The dangerous serpents of the United States are the Rattlesnake, the Moccasin, and Copperhead, and, though the error is on the side of safety, the popular fear of these is much greater than is warranted by fact.

The flesh of most of the Turtles, many of the Lizards, and that of numerous Batrachians, is excellent for the table. Aside from their value on account of flesh and habits of feeding, the Batrachia form an item of food for fishes that is not to be overlooked by those engaged in stocking ponds and streams.

REPTILES.

There is a great number of Reptiles among the fossils. Some of these belong to recent genera; others are of enormous size, and pertain to genera long ago extinct. It is the purpose, however, to confine attention in this work to living forms, and in the main to such as now exist in North America. These are included in four orders: TESTUDINATA, Turtles; RHIZODONTA, Crocodiles and Alligators; SAURIA, Lizards; and OPHIDIA, Serpents.

TESTUDINATA.

The form typical of this order has a short, clumsy body, of which the vital portions are inclosed in a bony case, formed by the expansion and consolidation of the backbones, ribs, and sternum. Perhaps it might be more exact to say the shell or box is formed by a union of dermal and neural skeletons. Young turtles have spaces covered by fibro-cartilage between the ribs, near the margins. Among fresh water turtles, *Trionycidæ*, this peculiarity is persistent; the upper shell, *carapace*, occupies only the central portion of the back, and the lower, *plastron*, is also incomplete. The Trunkback, *Sphargis*, has a leathery case rather than a shell. The epiderm has the form of thin plates or scales; these are much thickened in the Hawkbill, *Eretmochelys*, and form the tortoise shell of commerce; they are hardly noticed in such genera as *Trionyx* and *Sphargis*. The feet and limbs vary greatly according to habits. Marine species have broad paddles in which the toes are not distinct, and the claws appear as hooks on the margin. Certain fresh-water species have the toes broadly webbed and furnished with strong claws for tearing to pieces the creatures on which they feed. And in the land Turtles, *Testudo*, foot, ankle and leg resemble clubs or the feet of elephants. The skull is short, massive, and bears but a single condyle. Ordinarily the neck is long and flexible, and the tail is short; in sea turtles, however, the neck is comparatively short, and the tail of the "Snapper" is long.

The sight is keen. The eyes are usually somewhat large and very mobile; they are protected by two lids and a nictitating membrane. The hearing is tolerably acute; the tympanum is not protected by valves or cavity. As would be expected from the mode and infrequency of breathing, the sense of smell is dull. The tongue is thick and fleshy. From the manner in which domesticated species select their food, there can be little doubt of the possession of taste. This sense is probably more developed in the vegetable-eating land tortoises. No specialized tactile organs are known, unless, it may be, in the fleshy lips of some or barbels in exceptional cases, as the Matamata. Respiration is effected by muscular exertion or swallowing. Many, if not all, turtles have voice. The most recent verification of this has been in *Calemys Muhlenbergii*, by Dr. Abbott. Few creatures are more sensitive to changes of the weather. A passing cloud often drives them to shelter.

All turtles are oviparous. The eggs are fertilized within the oviduct; they are deposited in the sand or earth, and left to be hatched by the heat of the sun. The ovaries and testes are paired; the intromittent organ of the male is simple. When in copulation the male is carried on the back of the female. On the paddle of male sea turtles the first claw is modified so as to form a hook to grasp the edges of the shells of their mates. Males of many species are distinguished by a depression or concavity in the plastron.

Land Turtles generally have a well-ossified, high-arched shell, club feet, and long necks. They travel slowly, feed on vegetables, and are able to endure fasts of great length. Sometimes they make long journeys for water along accustomed routes. When drinking the head is plunged into the liquid, which is taken slowly in gulps, as if to prolong the enjoyment as much as possible. South America and the Galapagos Islands possess the largest living species. Our largest is the "Gopher" of the Southern States, *Xerobates.* "Box Tortoises," *Cistudo*, are not uncommon east of the Rocky Mountains. In these both valves of the plastron are hinged, and, when the head, tail, and limbs are drawn within, can be closed tightly against the carapace.

Mud Turtles have a more elongate shell than the preceding; and the height, compared with the length, is less. In structure the plastron varies considerably, most often it is rigid; one or the other, or both, of the lobes may be hinged. Their food is mixed—animal and vegetable. Species of *Emys*, *Cinosternum*, and *Ozotheca* are common examples. One of the largest that might be placed in this group is the gigantic river tortoise of the Amazons, *Podocnemys.* The largest North American inland turtles are the "Snappers," *Chelydra*, and *Gypochelys.* In them the head is large, tail long, and plastron reduced in size.

Fresh-water Turtles, such as belong to the genera *Amyda*, *Platypeltis*, and *Aspidonectes*, are seldom seen on the land. Their shells are much depressed and the margins are leathery. The nostrils are produced beyond the snout in a sort of proboscis, which admits of taking air without disturbing the surface of the water or showing the head. They are carnivorous, and feed on fishes, batrachians and worms. The feet are webbed, furnished with strong claws, and the marine species are hardly more expert in swimming. Some of these are quite as savage as the snappers.

The flesh of the majority of the land, mud, and water species is excellent. When brought to market they are ordinarily known by the name "Terrapin," though that best known by this title is the marsh turtle, *Malacoclemmys palustris.*

Sea Turtles are numerous off the coasts of Florida. "Trunk-backs" or "Leather-backs," *Sphargis*, are the largest, attaining more than a thousand pounds in weight. As the common name suggests, carapace and plastron are not ossified as in other marine genera. Sphargis is very erratic. Specimens from the Gulf of Mexico find their way northward to the coasts of New England, and are supposed to cross the Atlantic, individuals having been taken at the British Isles. Loggerheads, *Thalassochelys*, are more common. These reach a weight of four hundred pounds. They are said to eat almost anything—seaweed, sponges, crustacea, mollusks, fish, etc. A massive sponge growing around the Florida Keys is called Loggerhead sponge, because, as the fishermen say, the turtles are very fond of it. They take Conchs from their shells by biting off the small end of the spiral. The Bastard Turtle, *Colpochelys*, is smaller than, and intermediate between, Loggerheads and Green. Green Turtles, *Chelonia*, are reported to weigh as much as eight hundred pounds. They are most prized for the markets. A peculiar grass, *Zostera*, growing on the bottom in shoal places, is said to be their main dependence for food. A great many are shipped from Florida and the West Indies to the Northern States and Europe. Hawkbills or Shell-backs, *Eretmochelys*, are valued as the source of the shell used in the arts. One hundred and sixty pounds is a large weight. All of the marine species are used as food, but the Green is most sought. Many men do little else than supply the markets with the meat and eggs. According to an expert in these matters, Richard M. Kemp, turtlers most often make their captures by means of the peg. Bits of the grass floating above the grazing turtles betray their whereabout, and if they are not startled it is not difficult to fasten the peg in the shell. A peg is an iron instrument like a blunt nail, to which a line is attached, and which, when driven into the shell, easily slips out of the end of the long pole in which it is placed. By means of the line the turtle is drawn on board the boat. Mr. Kemp says that the Bastard and the Leather-back couple and lay in December, January and February, and the Hawkbill, Loggerhead, and Green in April, May and June. When about to deposit the eggs, the only time the shore is visited, the female selects some sandy beach, and in the night drags herself out above high-water mark. Here she digs a hole of one to two feet in depth, in which she drops seventy-five to two hundred eggs. She then covers the nest carefully, packing down the sand with her body, and retreats to the water. Fourteen or fifteen nights afterward she returns to make another nest near the first. Three to five times in a season, the fishermen say, she returns in this way. If a turtler going his rounds in the morning finds the tracks made on the way to and from the nest, he takes a short stick and carefully thrusts it down here and there in the trampled space until pushed through an egg, the yolk upon the probe discovers the nest. Fourteen nights later he is on the ground waiting till the creature comes ashore, when he turns her on her back, and in the morning carries her to the markets. Persons in the business claim that there is no diminution in numbers, which, in view of the wholesale destruction, seems hardly possible.

The eggs are spherical and soft-shelled—that is, they are covered by a thick skin, on which the limy covering is thin. The young are furnished with a sharp point in front of the nostrils, like that on the beak of a young bird, with which they tear their way out. At once, on freeing themselves from the sand, they take to the water. I am told these animals are very fond of the "Portuguese Men-of-War," *Physalia;* and that, when engaged in eating them, they shut their eyes to avoid the stings, and may be taken into a boat without pegging. Nets are also used in taking them.

RHIZODONTA.

Crocodiles have long bodies, long tails, short necks, and rather short legs. The heads vary greatly in shape; in some the snout is long and narrow; in other genera it is pointed, and in the alligators it is broad. The condyle is single; generally the vertebræ are concave in front. A complete separation exists between the ventricles, but communication between the atria mixes venous with the arterial blood going to the posterior portion of the body. In the skin of the dorsal portions there are bony plates. The epiderm is thin and corneous, closely attached to the skull, and arranged over body and tail in transverse series of rectangular plates. The mouth is large, and the jaws are strong. The teeth are numerous, conical in some, compressed in others, and in all received in sockets by their bases. The tongue is fleshy, short, non-extensile, and adherent to the floor of the mouth. Nostrils, eyes, and ears are situated prominently on the top of the head, which enables the animal to breathe, see, and hear without exposing itself. The eye is provided with three lids; the pupil varies from horizontal to vertical in the different genera. By means of valves the tympanic cavity may be closed against the water. At the back of the tongue a valvular arrangement closes the mouth cavity against the water when struggling with the prey below the surface. In some respects the stomach resembles that of birds; it is rounded and the coating is thick. The abdominal is separated from the pectoral chamber by a muscular diaphragm. Crocodiles are carnivorous; they commonly drown their prey, afterward going to the shore to eat it. They are said sometimes to wait until it is partially decomposed. Their flesh is rarely, if ever, eaten. Recently the skins have come into use to a considerable extent for leather. The eggs are oblong, and have a hard shell; they are left in holes in the earth and sand to hatch. The cloacal aperture is a longitudinal slit; the penis is single. The Rhizodonts are long lived; the young grow rapidly, adults more slowly. Specimens have been taken of lengths greater than fifteen feet. When swimming they propel themselves by the tail, the webs between the toes in many species being of more service in lifting them from the mud.

Voice in this group seems to be limited to a sort of suppressed bellow or blowing noise. Habits vary in different genera; some are nocturnal, others diurnal. In regions affected by protracted drouths some bury themselves in the mud before it hardens, and reappear when the rains have again softened it sufficiently to allow them to release themselves. Some are very dangerous. Natives in crocodile-infested regions are able to free themselves when seized by the creatures by thrusting the fingers into the eyes. Few animals are harder to kill. A hook baited with flesh and tied to a number of small cords, which get between the teeth, is the best means of capture. Caught in this way the powerful blows of the tail are effectively used in defense.

The common North American representative of the order is the Alligator, ranging from Florida to Tehuantepec. Stragglers have been reported as far north as the mouth of the Ohio river. A crocodile, *C. americanus*, ventures north along the coasts of Mexico from Central America. Another, probably *C. intermedius*, from the West Indies, is occasionally found in Florida.

SAURIA.

The transition from this order to the preceding and to the following is so gradual that it is next to impossible to cite characters that shall be general and exclusive. In a general way animals belonging to this order are distinguished from the Rhizodonts by dentition, squamation, structure of heart, structure of ear, transverse anal aperture, and male sexual organs, and from the Ophidians by lack of motion of maxillæ and other bones of the head, elastic symphysis of mandibles, structure of ear, structure of eye, and presence of limbs. It will be seen at once that there are numerous exceptions, especially in regard to the separation from the serpents. Scolecophidia have the bones of the head more firmly united than other snakes, and some agree with the Amphisbænæ of the Sauria in the possession of rudiments of limbs not visible externally. A few lizards have the ears covered by the skin, and others have no eyelids. There are serpents and lizards which have similar forms, motions, and habits. The extent of variation may best be seen by comparison of the examples cited below.

Development of the senses varies according to habits. In the serpent-tongued lizards we meet with great quickness of sight, hearing, scent and touch, accompanied by lack of taste—the tongue simply being a very sensitive tactile organ. Again, in species living upon vegetation, the touch is deficient and the tongue is short and thick, evidently an organ of taste. The keen-sighted Chamaeleon has a tongue which is probably an organ of taste as well as touch.

Many of the Saurians are noted for transient variations of color. The cause of these changes is found in the presence of pigments of different colors at various depths below the surface of the skin. The expansion or contraction of one or more of the layers, in consequence of muscular action, nervous irritation, or contraction or inflation of the lungs, changes the proportion of the different pigments visible at a particular instant. If the upper layer contains the dark pigment, the contraction of its chromatophores lessens the visible amount of this color and exposes a greater amount of that beneath it. These changes are not to be confounded with that occurring on soils of light color, or in regions where there is great reflection of the rays of light; in such localities permanent lightening of the colors is apparently due to a bleaching process undergone by the pigments. It seems as if the effect of polarized light upon the pigment differed from that of the direct unpolarized rays. Commonly each vertebra is concave in front and convex behind. To this there is a very marked exception in the case of the RHYNCHOCEPHALIA, a suborder founded on a family represented by a single genus of New Zealand lizard, *Hatteria* or *Sphenodon*. Externally this animal resembles the species of the European genus *Lacerta* so much that one can hardly believe it more than generically distinct. Skeletal structure and details of anatomy discover differences of sufficient importance to warrant the establishment of a different order. Most noticeable of its peculiarities are the series of palatine teeth, the structure of the skull, the biconcave vertebræ, the presence of a cartilaginous rib beneath each transverse fold of the skin of the abdomen, and the absence on the male of intromittent sexual organs. Of those examined the females were lighter in color, and possessed much lower crests than the males. Specimens from the Ru Rima Rocks are smaller and darker than others from the main island. The stomachs contained nothing but insects.

Heloderma, one of the largest North American lizards of the Sauria proper, inhabits the arid region extending from Utah to Tehuantepec. It is a clumsy, slow-motioned creature, and presents a repulsive appearance. The skin is covered with transverse series of thick plates, rounded and separated somewhat on the back, quadrangular and close together on the ventral surface. As if better protected from below, the Heloderma is said to turn himself on his back when attacked. The teeth are long, slender, sharp, and grooved. The saliva is very irritating when introduced into a wound, as is almost certain to be the case when the animal is enraged. It is generally considered to be fatal to the smaller animals. These are probably the only venomous of the Saurians. They are terrestrial and carnivorous; not at all particular as to kind and condition of food. Two species of the genus are all that are known. By some authors they have been placed in the *Varanidæ;* for others they form the family *Helodermidæ*, which disposition is to be preferred.

The *Varanidæ* include the largest lizards of the old world. They are elongate and slender in build, and live near the water. The nostrils can be closed by valves, and are provided with air pouches, arrangements which greatly favor diving and remaining below the surface.

True *Chamaeleonidæ* are not found in America. The home of the family is Africa and Madagascar. One or two species have found their way northward in Southern Asia and Europe. That wrongly called by the name in the Southern United States is an Anolis. Chamaeleons have compressed bodies, short necks, and prehensile tails. The head is angular, often crested or provided with one or more proboscis-like processes in front. The skin is covered with granular folds or scales. The tongue is long, slender, and very extensile; it has a club-shaped extremity, prehensile and viscous in front. The eyes are large, globular, very mobile, covered by a lid through the center of which there is a narrow opening. A Chamaeleon is able to watch an object ahead of him with one eye while closely examining with the other something that has attracted his attention in the opposite direction. The tympanum is covered by the skin, but as the latter is exceedingly sensitive to irritation of any kind, it is possible the hearing is not greatly interfered with. The limbs are slender, compressed, and each bears five toes disposed in two opposable groups. Such an arrangement of the toes, with the prehensile tail, enables the animals to walk lengthwise of the small branches with readiness. They spend their lives in the trees, and feed mainly upon insects, capturing them with the tongue, which can be thrust forward several inches for the purpose. The females lay from eight to a dozen eggs under the fallen leaves. In this group the transient variations of color are excessive in amount and rapidity; they often differ on opposite sides. Ability to take on at will the color of any object upon which an individual may be placed does not exist.

Most of the *Gecconidæ* have rudimentary eyelids, and the eyeball covered by a transparent membrane under which it moves with freedom. A few have connivent lids. The pupil is most often oblong and erect. The tongue is short and thick. The skin is covered with granular or tubercular prominences, which are not imbricated. In the greater number of the species the feet are provided with adhesive apparatus under the toes in the shape of expansions or transverse series of plates, with which they are able to cling to vertical and smooth surfaces. These disks vary greatly in the different genera. Sometimes there are no disks, and sometimes the claws are absent. Occasionally the claws are retractile as in cats. The body and head are commonly depressed. When broken or lost, the tail grows out again; it may be reproduced a number of times in the life of the individual. This organ takes on fantastic shapes in some species; in all it is very fragile. *Ptychozoon* is marked by fringed dermal expansions on sides of tail, body, and head, which form a sort of parachute, answering a similar purpose when leaping to that of the membranes of *Draco*. The name *Gecco* is given in imitation of the voice. Geccoes live in the tropics of both hemispheres. Some frequent houses, where they are very useful on account of their insectivorous habits. In the United States a single species is represented, *Sphaeriodactylus notatus* Bd., at Key West, Florida. Three or four others, belonging to *Coleonyx*, *Diplodactylus* and *Phyllodactylus*, are reported from Sonora and Lower California. Farther South they are more common.

The *Agamidæ* belong to the Eastern Hemisphere. In this family the eye and eyelid are well developed, the teeth are generally planted upon the upper edges of the bones of the jaws, the tongue is thick, and slightly, or not at all, extensile, the scales are imbricate, and the tail not nearly so fragile as in other Saurians. The toes are without disks. Of the odd forms in the various subfamilies, probably none is more striking than that of the

Dragons or flying lizards, *Draco.* These possess a membranous expansion on each side of the body, supported by the posterior or false ribs, which are much lengthened for the purpose. This membrane may be folded back against the body or expanded to serve as a parachute, as in case of the flying squirrel. The ordinary mode of progression is by means of short jumps. A dermal expansion or goitre depends from the throat; it is distended when in use by the hyoid apparatus. The tail is long and slender. All the species of Dragons are small; the total length seldom exceeds seven or eight inches. *Lyriocephalus* has its ears hidden under the skin, and its snout surmounted by a globular prominence. *Ceratophora* has a lobe or conical pointed horn above the tip of the snout. *Moloch*, an Australian lizard, literally bristles with spines. *Chlamydosaurus*, also Australian, has broad fan-like membranes extending backward from the sides of the back of the head.

The *Iguanidæ* belong almost entirely to the new world. They are diurnal. Their eyelids are valvular, and their tongues thick and slightly notched. This is one of the families in which forms and habits are most diversified, as will be seen by the instances cited below. It contains some of the largest species of the order. Among these are the terrestrial cactus-eating *Conolophus* and the amphibious *Amblyrhynchus*, which feeds on sea weeds and when pursued secretes itself beneath the rocks under the water, genera inhabiting only the Galapagos Archipelago. *Metapoceros*, the Navassa lizard, found also in Hayti, is very large and strong. To aid in burrowing, older specimens have peculiar scrapers under the basal joints of the third and fourth toes, and the second joint of the third toe of the hind feet. These scrapers are on the front side of the toes as they are pushed backward; they are merely expanded and solidified scales, the lower extremities of which form a sharp serrated edge of five or more denticulations arranged in a curve, convex forward In *Thysanodactylus* the scales along the sides of the toes are so much expanded as to answer the purpose of a web in swimming. *Iguana*, though venturing north into Mexico, is properly a South American genus. It is also a common lizard in the West Indies. The species are large, rivaling the Galapagos lizards in bulk but much longer. Their flesh and eggs are much prized by the natives of the localities in which they are found. Where they have not been disturbed they are very tame and enjoy sunning themselves in pleasant weather extended along leafless branches of trees. They are hunted with dogs, and taken from the tree with the noose, the arrow, or the gun. The range of *Basiliscus* also extends northward into Southern Mexico. Crested on head, back, and tail, slender and spider-like in build, in novelty of appearance it rivals the *Chlamydosaurus*. In some genera, as *Polychrus* and *Sphaerops*, the skin is to such an extent unprotected by the scales or granulations as to allow the transient color variations to be very noticeable.

Nine or ten genera of the family are found north of Central Mexico. Only one, in a single species, *Sceloporus undulatus*, occurs east of the Mississippi. The undulated lizard ranges northward from the Gulf as far as Southern Illinois and Maryland. It is common in parts of Kentucky and Virginia. *Phrynosoma*, a viviparous genus, ranges from Mexico to Dakota; it contains nine species, none of which appear East of the plains. One, *P. douglassii*, is common in Southern Dakota. Early in August the female gives birth to about eight young ones. Ants appear to form their principal food, though they are not by any means limited to them. They are vulgarly called "Horned Toads." The subfamily *Anoliidæ* is represented in the Southern States by a common Saurian, the little greenish, flat-crowned, slender-tailed, goitred lizard of the trees and bushes, sometimes called "Chamaeleon" or "Scorpion."

The *Lacertidæ* belong to the old world. They are diurnal land lizards, with polygonal symmetrically-arranged shields on the head, slender, forked exsertile tongues, eyes provided with lids, nonimbricate scales, four limbs, and long fragile tails. They are the common lizards of Europe. The genus *Zootoca* is viviparous.

The *Teiidæ* are Saurians of the Western Hemisphere. Their heads are covered with angular shields; and their tongues are free, notched, and exsertile. The only genus representing the family in the United States contains the slender, short-limbed, six-lined lizard *Cnemidophorus sexlineatus*, of the South. Species of this genus are more numerous in the Rocky Mountain district, from Montana to Mexico. *Teius* contains several large South American species; they are the "Tupinambis" of the Amazon basin. A young individual has the teeth fixed on the inside of the jaw bone, but as he grows older the bone surrounds them more and more.

The Scincs, *Scincidæ*, generally have fusiform or subcylindrical bodies, and are covered with glossy scales, which are either smooth, keeled, or grooved. The limbs are short, the body and tail rather long. In some there are no limbs, *Anguis;* in others there are two, *Ophiodes;* and in the majority there are four. The eyelids are connivent. Transparent lower lids occur in species of *Eumeces.* The tongue is slender, exsertile, and provided with a pair of pointed extremities. In habits the Scincs are terrestrial. They secrete themselves under logs, bark, rocks, leaves, or in shallow burrows in loose earth or sand. Their eggs number ten or a dozen, and are laid in these situations. East of the Mississippi *Eumeces fasciatus*, the "Blue-tail," is the most common; it is found as far North as Illinois and New York. Specimens ten inches in length are very large. A second species, *E. anthracinus*, is found in the mountains of Pennsylvania and Southward. Two others have been described from Florida. Westward to Mexico the number is much increased. *E. leptogrammus* is taken in Dakota. A species of another genus, *Oligosoma laterale*, has a distribution somewhat similar to that of *E. fasciatus*, probably not extending quite so far North. The family is found in all tropical and subtropical countries. *Trachydosaurus*, the "Stump-tail," and *Cyclodus*, Australian genera, are of the largest.

A Californian genus, *Aniella*, furnishes a foundation for the family *Aniellidæ.* This lizard has a long snake-like body and tail, and is without limbs.

The Acontias, *Acontiadæ*, are from the Eastern Hemisphere. *Acontias* has no limbs, and the upper eyelid is rudimentary. *Evesia* has short limbs, and the toes are not separate. *Nessia* has only three toes to the foot.

One of the common lizards of Southern California and Mexico, *Gerrhonotus*, belongs to the *Zonuridæ*, a family of which the greater portion belongs to the old world, and which is specially marked by a distinct longitudinal fold or groove along each flank. Another member of this family is the footless snake-lizard, *Ophisaurus.* The latter has a long, slender tail, which is easily broken, and being longer than the body, more than half the total length can be carried away without disabling the animal, which, by a second growth, soon replaces the portion lost. It is to this peculiar genus that we owe the fiction of the "Glass-snake." *Pseudopus*, an allied genus of Europe and Southern Asia, resembles the preceding, but has on each side of the vent a small limb, on which the toes are not separated.

The AMPHISBÆNIA form a very distinct suborder of the Sauria. In the typical forms the body is long and subcylindrical, and the tail short and thick. The bones of the skull are firmly articulated, and the symphysis of the lower jaw is nonelastic. The tongue is flat, thick, and notched at the end; the eyes are small and covered by the skin; the ears are hidden; and the surface of the skin is divided into small rectangular spaces by transverse folds traversed by longitudinal grooves or furrows. Limbs are absent, or only present in front. *Chirotes*, a Mexican genus, has the fore limbs; the other genera are footless. Most of the species are said to be found in or about the nests of ants. One species, *Lepidosternon floridanum* Bd., inhabits the Southeastern United States.

OPHIDIA.—Serpents.

The elongate spindle-shaped or subcylindrical form of the snake is a familiar one. There are species which present no distinction between head, neck, and tail, and there are others in which these parts are well marked. The majority have no limbs; a few have rudimentary hind limbs, which appear as claws on each side of the vent. A sternum is lacking, but in the worm-snakes there are rudiments of a pelvic arch. Most of the serpents have teeth on jaws and palate. In consequence of the elastic articulations of the bones of the skull and the symphysis of the lower jaws, they are able to swallow animals considerably larger than would otherwise be possible. All the species of the order are carnivorous. Some crush their prey in the folds of the body, others kill the creatures on which they feed by venomous secretions, but the greater number swallow living food. During the operation of swallowing, small pores along the jaws give out a saliva which renders the act more easy. Frequently the snake disgorges a partly-swallowed meal to change its position in the mouth, or to take breath; the slimy appearance of such morsels has given rise to the erroneous idea that they have been deliberately covered with slime before the attempt to dine. Movable eyelids do not exist in the Ophidia. The epiderm is continuous over body and head, and forms a transparent cover for the eyeball. With the slough or cast skin the outer envelope of the eye is carried away; this happens at least once in a season.

Near the time of sloughing or moulting, the dermal covering of the eye is loosened, more opaque, and interferes, to some extent, with the sight; at such times snakes are said to be blind. Size of ball, shape of pupil, keenness of sight, etc., vary according to the habits of the species. Hearing is dull. There are no external evidences of ears, and it is most likely the jar felt over the whole body from an approaching tread often gives the needful warning. The hissing sound produced by expelling the breath from the lungs has been supposed to be the nearest approach to a voice. Lately, however, some

Yellow Boas, *Chilabothrus inornatus*, in my possession have been repeatedly heard to give utterance to a low plaintive whine as the breath has been forcibly emitted. Apparently it is by the sense of smell that the snake finds its companion. About the time of coupling many species are possessed of a powerful and very disagreeable odor. The sense of taste is probably lacking. The tongue is a tactile organ; it is soft, slender, provided with a pair of flexible tips, and can be retracted into a sheath at the bottom of the mouth. As serpents move about they are constantly feeling ahead of them with the tongue, and the forward thrust and peculiar appearance of this organ has given rise to the false idea that with it the "stinging" is done. The stomach is formed by a widening of the alimentary canal; its sides are thicker than those of the æsophagus, and have longitudinal folds. Digestion is quick or slow according to the temperature; venom hastens the process. One lung is often rudimentary; in species of *Boa*, *Naja*, and *Crotalus*, both are developed; in *Boa* they are about equal in size. The ovaries and testes are paired, the right often larger and placed a little in advance of the left. The male is furnished with a pair of intromittent organs, one of which is placed on each side of the vent under the base of the tail. They are tube-like, and bear a groove on the side; when in use they are everted like the finger of a glove, and the groove becomes an external furrow by which the seminal liquid is conducted into the oviduct. Careless observers have mistaken these organs for feet. In certain species their extremities are surrounded by series of strong, sharp spines or hooks. The eggs are oblong, and have a soft, leathery envelope, for the rupture of which in hatching the young are provided with an egg-tooth. Oviparous serpents generally leave the eggs to hatch and care for themselves; the Pythons or rock snakes of the Eastern Hemisphere are exceptions to this rule; after the eggs are laid the female coils her body round them and incubates. Viviparous species are those in which the eggs are hatched in the oviduct; there are those in which hatching and laying happen so nearly at the same time that they are at times oviparous and at others apparently viviparous. The ribs are very numerous, in some species numbering hundreds, and are loosely articulated to the vertebræ. They furnish the main dependence in locomotion. In reality, there are three methods of progression used by Ophidia, and each of these may be employed separately. When a serpent glides he brings the lower ends of opposite ribs forward at the same instant. Each step is short, hardly equal the length of one of the ventral scutes. The ribs are attached to the scute in such a way that its free posterior edge, braced against projections on the surface over which the animal is moving, serves as a support from which the body is pushed ahead. A track left by a gliding snake may be a right line. This motion can be executed so that the entire body moves along without apparent effort. In walking opposed ribs are moved forward alternately, and the edge of the end of the scute under the rib moved holds what is gained by the motion while the opposite extremity is stepped ahead of it. This mode of traveling gives rise to flexures of the body, and the track is undulating. By the third method, the creature pushes or elbows its way with the body and tail, as do the eels or snake-like batrachians. Most of the worm snakes progress in this way. In fact, any snake hurriedly moving among grass, bushes, or rocks, takes advantage of any support he can get for his sides or extremity. Except when gliding, serpents in motion commonly use the three methods at the same time.

The outer dermal layers are generally folded into the semblance of scales; occasionally they are tubercular or granular. The scaly folds are most often imbricated on the body, and occasionally over the head. Generally labial and other plates of the head are non-imbricated. When the epiderm is to be shed, the snake rubs it loose at the lips, and, creeping against some object, manages to strip it off entire, and ordinarily inside out. The number of times the skin is shed in a season is variously stated by different authorities. Serpents that were kept for study have sloughed but once in a year, and I am inclined to believe this is the common practice. Nocturnal serpents are few, and belong to the torrid zone. Most, if not all, are affected by a period of comparative inaction; during the winter this takes the form of hibernation or a winter sleep. Such a sleep or rest is not an absolute necessity; when waked and kept lively every day of the winter they do not seem to be any the worse for it in the spring.

In coloration these reptiles are excessively varied; individual variation is great in the same species; the colors are more bleached in exposed situations; and of terrestrial species, those portions of the body that are habitually raised from the ground are commonly whiter beneath than the balance of the ventral surface.

Certain good authorities have adopted the idea that some snakes swallow their young for protection in times of danger. The evidence hardly appears sufficient to warrant the belief. Instances reported to the writer concerned some known to be snake-eaters; others known to lay eggs, paying no farther attention to them, and others of undeterminable species noticed by incompetent observers.

The Museum of Comparative Zoölogy possesses a specimen of *Coluber constrictor*, the "Black Snake," taken in Essex county, Massachusetts, by Prof. Putnam, the stomach of which contained a half-digested specimen of *Cyclophis vernalis*, the "Green Snake," and another of *Storeria dekayi*, DeKay's "Brown Snake." It is a well established fact that this snake and others feed upon their own species at times. Specimens of viviparous species, in which the young were about ready for delivery, have led some to the mistaken belief that the little ones had been swallowed.

The classification adopted in the following synopsis includes all serpents in four groups or suborders: SCOLECOPHIDIA, worm snakes; ONYCHOPHIDIA, clawed snakes; ACACOPHIDIA harmless snakes; TOXICOPHIDIA, venomous snakes.

SCOLECOPHIDIA.

Those of the first suborder are subcylindrical, wormlike, burrowing species, which feed upon worms, larvæ of insects, and the like, living beneath the surface of the ground. The body is usually elongate, and the tail short and thick. On account of their subterranean habits, the eyes are protected by thickened plates, and are more or less imperfectly developed. Probably it is by the sense of smell that the presence of food is detected. The mouth is comparatively small, and the bones of the skull are more firmly articulated than in other Ophidians. There is great similarity between the scales of the back and those of the ventral surface. The body is marked by a certain rigidity, necessary in burrowing, which makes these snakes very awkward travelers upon the surface of the ground. As if to aid in pushing, the tail is in cases provided with a sharp spine, and in others it is truncate and tubercular. Venomous Scolecophidia are unknown. North American representatives of the group are found in ten or eleven species of the family *Typhlopidæ*. They range from California and Texas southward and westward. Worm snakes belong to tropical and subtropical regions of both hemispheres. Certain species possess a rudimentary pelvis.

ONYCHOPHIDIA.

Serpents of the second suborder, *Onychophidia*, are distinguished by rudimentary posterior limbs, the only external evidence of which is a small claw or prominence on each side of the vent. This group contains the largest of the snakes, the Boas and Anacondas of the Americas and the incubating Pythons of the old world, species of which are said to reach a length greater than thirty feet. The section of the group containing species with thick non-prehensile tails is represented in California and Mexico by several burrowing snakes belonging to the genus *Charina* of the *Erycidæ. Eunectes*, containing the Anacondas, is a South American genus, and its species reach greater size than other new world snakes; it belongs to the section with prehensile tails. Of this section there are three species of *Boa* in Mexico; a doubtful fourth is reported in the Yellow Boa, *Chilabothrus inornatus*, properly of the West Indies. These Onychophidia are expert climbers, and many are equally active in the water. None of them are venomous. They are able to swallow animals of much greater diameter than their own. Ordinarily they seize the prey with the teeth and crush it in folds of the body.

ACACOPHIDIA.

The innocuous snakes comprise all the common, harmless species of the ground, fresh water, or trees. Being not at all harmful, and feeding on mice, moles, insects, etc., many of them are important aids in restraining the increase of the most destructive enemies of the husbandman. The vulgar fear of these animals is mainly the result of education or of prejudice, which lacks foundation in facts. In reality, some of the most dreaded have no existence. Such as the "Ring" or "Hoop Snake," which is said to take the end of its tail in its mouth and roll over and over like a hoop, killing everything it touches with its venomous horn, and the "Blow Snake," the breath of which is deadly, are mere fictions. A few members of the division prey upon others, and are said to conquer and eat species of the Toxicophidia.

Several are possessed of considerable curiosity, and sometimes follow objects that have attracted their attention. The common black snake, *Coluber constrictor*, occasionally chases men in this way, but if turned upon at once seeks safety in flight. It happens at times that harmless species put themselves in the attitude of defense, and resent attack when unable to escape; their bites are mere scratches, and should occasion no anxiety.

Although typical earth, water, or tree snakes are very distinct, the intermediates are so numerous as to make it impossible to classify them according to habits. It is well, however, to note the differences of the types, without losing sight of the fact that there are forms of such structure and habits as to make their position doubtful in either of the three divisions.

Ground Snakes are rather stout and thick in body and tail. Their bodies are usually cylindrical, and the tails most often short and conical. For the most part they have smooth scales. The eye is of moderate size to small, and the pupil generally round. Certain species which burrow, as those of *Heterodon*, have valvular nostrils, and rostrals shaped somewhat like shovels or plows.

Water Snakes are well represented in the genus *Nerodia*, in which the body is stout and fusiform, the tail tapering, the nostrils valvular and near the top of the snout, and the scales keeled. One of the most peculiar forms of the division is *Herpeton*, which has a pair of feelers or tentacles extending forward from the muzzle.

Tree Snakes are very long and slender. Their eyes are comparatively large, and the pupil is either round or oblong, erect or horizontal. Tactile appendages to the snout are possessed by some species. In general they feed upon the small animals that make their homes among the leaves and branches. *Rachiodon*, an African genus, feeds on eggs; it has very weak teeth in the jaws, but the inferior processes of the vertebræ of the neck extend into the æsophagus, and are tipped with enamel for the purpose of crushing the shells after so far swallowed that the contents may not escape by the mouth and be wasted. Green is a very common color in this division.

In the list of families in this suborder north of Tehuantepec, several really belong to South America, being introduced on account of straggling species reported from the Mexican region. Of the *Dipsadinæ*, a single species ranges north of Mexico into Arizona and Texas. From Southern Mexico two species of *Scytalinæ* have been noted. There are two species of *Dendrophinæ*, which also range into Mexico. The most abundant North American snakes belong to the *Natricinæ*, of which species, as *Eutænia sirtalis*, range over the whole continent, excepting the far North. The genera *Eutænia*, *Nerodia*, *Regina*, and *Storeria*, are North American; *Helicops* and *Hydrops* are better represented in Central and South America.

Although the family names in common use are retained here, they are ranked as subfamilies of one great family, including all the Acacophidia or Colubrine snakes, the *Colubridæ.* The family *Colubrinæ* contains in the genus *Coluber* several species very common in the United States: the Black snake, *C. constrictor*, is found over a great portion of the continent, and the section of the genus containing the Coach Whip snake (*Masticophis*), *C. flagelliformis*, includes half a dozen species, from the Southern States, Mexico, and as far south as Chili. Two species of the South American genus *Spilotes* are found in the Gulf States. *Pityophis*, *Cyclophis*, *Phyllophilophis*, and *Salvadora* are North American. As the name *Salvadora* does not seem to be used elsewhere in the animal kingdom, it has been retained. *Dromicus* is South American and West Indian, but contains one species peculiar to the Southeastern United States and several others found in Southern Mexico. The old world genus *Elaphis* claims several widely distributed species from the southern half of the continent.

Tachymenis, *Erythrolamprus*, *Liophis*, and *Xenodon* are South American *Coronellinæ*, and are represented by a few species in the southern part of Mexico. *Ophibolus*, *Diadophis*, *Heterodon*, *Rhinocheilus*, *Cemophora*, and *Hypsiglena* are classed as North American; the first three are found in all the States, with, perhaps, a few exceptions in the northern tier.

The *Calamarinæ*, of the genera *Tantilla*, *Contia*, *Sonora*, *Virginia*, and *Carphophis* are Northern; *Ficimia*, *Cheilorhina*, *Stenorhina*, *Ninia*, *Geophis*, and *Elapomorphus* are shared by Mexico with South America.

Tree snakes are found in the *Dipsadinæ*, *Scytalinæ*, *Dendrophinæ*, and *Colubrinæ;* water snakes in the *Natricinæ;* and ground snakes in the *Calamarinæ*, *Coronellinæ*, and *Colubrinæ.* But in each family there are species whose habits are so uncertain as to render their positions doubtful.

TOXICOPHIDIA.

Grouping all the venomous serpents in a single suborder, brings together animals of considerable diversity. Because of their differences they have been arranged in various sections: one, the *Proteroglypha*, in which the fangs are erect, immovable, and grooved in front; and another, the *Solenoglypha*, which are distinguished by an erectile perforate fang. The Proteroglypha are subdivided still farther into the *Conocerca*, the conical tailed or colubriform, and the *Platycerca*, flat-tailed or sea snakes. The Solenoglypha are also subdivided into *Abothrophera*, pitless vipers, and *Bothrophera*, which are marked by a pit on the side of the face between the eye and nostril.

The cosmopolitan genus *Elaps* contains all the North American species of *Conocercæ*. There are two species in the Southern States, and a half dozen or more in Mexico. Our species are not considered dangerous. Among the old world species of the division are some of the most deadly of the order, such as the Cobras, *Naja*, of Southern Asia and Northern Africa, the favorites of the Indian jugglers. As in other sections, there are species which feed upon other snakes.

The *Sea Snakes*, *Platycerca*, have the nostrils on the top of the snout, and the tail compressed so as to form a paddle. Three to five feet in length is the common size; ten feet is a great length for the largest. They are numerous in parts of the Indian Ocean. As far as known, a single species has been found in fresh water, *Hydrophis semperi*, from Lake Taal in the Philippines. *Pelamys bicolor* has been taken off the coasts of Southern Mexico. Sea snakes are said to approach the shores only when about to give birth to the young. They feed upon marine animals of various kinds, and are sometimes taken in the nets of the fishermen, who fear them very little.

The *Abothrophera* belong to the Eastern Hemisphere. Serpents of this division differ from those of the next principally in the absence of the pit or lachrymal fossa. With this exception, structure, habits, effects of venom, etc., are similar.

The pit vipers, *Bothrophera*, are the most venomous of the new world Ophidia. A single family, *Crotalidæ*, has heretofore included all of them. As in the pitless vipers, the fangs are the only teeth upon the maxillaries. The latter are short, and rotate upon the lachrymal and frontal bones in such a manner as to allow the fangs to recline against the roof of the mouth, where they are covered by an elastic membrane when not in use. The fangs are replaced when shed or broken by others, which grow in a reclining position behind those in function. A section of one of these fangs indicates that the tooth has been folded from its sides forward and closed around the groove which opens a short distance above the point. Another opening at the base is opposed to the extremity of the duct from the venom gland at the side of the skull behind the eye. This gland is hollow, and contains the venom it secretes. Venom glands vary considerably in size and position; they extend back upon the neck in certain Conocercæ. Compression by means of the muscles upon the gland forces its contents through the duct and tooth. This compression is entirely independent of opening the mouth or erecting the fangs. At the will of the serpent the venom may or may not be delivered with the bite. As if the creature was economical, and did not wish to waste its supply, it is frequently the case that it strikes one or more times without using the poison, and is able to strike a more effective blow when more thoroughly exasperated. If an angry snake is held up by the neck, and its mouth kept open, it will raise and lower the fangs from time to time, and occasionally spurt the venom through them with considerable force. Usually on being disturbed and unable to retreat, the snake throws himself into an attitude of defence by coiling his body so that the upper half can be readily straightened in the act of striking. A Rattlesnake will place the tail in the coil with the rattle directed upward. Very angry individuals strike whether coiled or not. They do not jump; the hinder part of the body remains in position, and none of our serpents are in the habit of reaching more than half of their length. If a stroke is successful, and the fangs enter the flesh of the victim, a backward pull throws the weight of the body on the fangs, tending to make free a space in front of them for the introduction of the venom. A blow is sometimes given when the fangs are not erected, sometimes with the mouth wide open, and sometimes, apparently, with the jaws closed, the fangs passing on the outside of the lower jaw which then serves as a lever with which to disengage them. After wounding it fatally, the snake watches the prey very intently until the venom has produced the desired effect and the victim falls, when it appears as if an estimate of the size was made with chin and tongue by passing from one end to the other of the body before the attempt to swallow begins at its nose. This intent gazing at squirrels, birds, etc., in their dying agonies, has given rise to the erroneous ideas concerning fascination. All there is of fascination or charming is to be accounted for by the fact just mentioned, together with the quiet, almost imperceptible motion of the snake and the recklessness and terrorism of the prey. Venom hastens decomposition, and thus renders digestion more rapid.

In general the venomous snakes of North America are much less dangerous than is supposed. What is fatal to the small animals which form their food becomes much less troublesome to larger ones. The degree of danger to men varies according to the size of the snake, the number of blood vessels in the part bitten, and the condition of the system at the time. There is a great variation in the amount of venom injected. After it has bitten several times, the supply of venom is reduced, so that a bite from a large specimen is not attended by serious consequences. The immediate effects of the poison are a terrible pain and rapid swelling about the bitten part, followed by general nervous prostration or exhaustion, retarded respiration, and enfeebled action of the heart, accompanied by vomiting, perspiration, and partial loss of control of the muscles. When not fatal, recovery is very rapid, usually being complete in about three days. A peculiar swelling on the jaws remains for a long time in cattle that have been bitten. Fatal cases in which men have been victims probably do not number as many as one in twenty. The remedies are cutting out the bite, burning with red-hot iron, caustic or nitric acid, suction by the mouth or cups, ligatures to prevent the rapid dispersion of the poison through the system, ammonia used as a wash and taken internally, and alcoholic stimulants. If there are no cuts or sores in the lips or mouth, the poison can be drawn out by suction; it is only when introduced into the blood that it is effective. On receiving a bite, the first thing to be done is to suck out as much of the poison as is possible, enlarging the wound with a knife for the purpose. At once a bandage should be put on so as to keep the venom from the rest of the body as long as possible. For a bite on the finger, it should be tied between the bite and the hand; another ligature should be placed around the wrist, and possibly a third around the arm; these should be loosened gradually and for an instant at a time, the aim being to control the dispersion, and introduce the dangerous matter into the circulation little by little. It is well to cauterize immediately if possible. Washing the wound with ammonia is recommended, as also drinking a dilute mixture of ten or fifteen drops in a glass of water. Alcoholic stimulants are undoubtedly beneficial if not taken to excess, in which case they become sedatives, and assist rather than counteract the poison.

The rattle of the Rattlesnake is formed of horny rings or shells, of which the first is firmly attached to the end of the tail, and each of the others loosely grasps that in front of it, and is itself grasped by the next in order.

It is believed that one joint is added to the number each year; this is but approximately true; there are variations connected with the different ages and rates of growth, the extent of which have not been fully determined. The joints are so easily worn out and broken that it is seldom the case that a large snake has the complete series.

The probable use of the organ has given rise to a great deal of discussion. Because of the resemblance of the sound to the crepitation of the grasshopper, and to the shrilling of the Cicada or harvest fly, though much less rapid in its vibrations than the latter, it is claimed that it draws insect-eating birds within reach. This is possible; but the fact that the snakes are usually so quiet when feeding, and that birds are so rarely found in their stomachs, bears against the supposition. The idea that the rattle produces terrorism in the prey is hardly tenable, since it appears to be least used when feeding, and frightens the game away. The rattles are used in time of coupling, but not with the energy marking their use in anger. In reality, the attitude of the serpent is defensive at all times, unless it be when seeking food; it prefers to economize venom and take no risk of losing fangs; it does not wish to strike unless driven to do so; and the rattling is a threat or warning that it is ready if it must. In economizing venom and fangs the rattle is undoubtedly beneficial, and prevents a great many useless strokes; at the same time its action is disadvantageous in that it calls the attention of enemies to its owner. A snake appears to realize how much its subsistence depends on an ever ready supply of venom and perfect fangs, and how helpless it becomes without them.

It is often asserted that deer destroy a great many snakes. On what foundation the assertion rests I do not know. Hogs are certainly fond of them, and large fowl are especially destructive to the young.

Ancistrodon, Copperheads and Moccasins, and *Crotalus*, Rattlesnakes, are about equally to be feared. These genera properly belong to North America. Five species of Rattlesnakes are found East of the Mississippi.

Certain species having plates on the crown resembling those of the Colubers have been given the generic names *Crotalophorus*, *Caudisona*, and *Crotalus* by different authors. These names were synonymous at a time when the species of which we speak were unknown. They were originally applied to species which have not been separated from the genus as first constituted. In view of this, it seems best to regard them as synonymous, and to give to the species with the shields a name less liable to confuse on account of previous association. The name proposed for the species grouped under *Crotalophorus* of Gray, Holbrook, and others, but not of Linné or Gronow, is *Sistrurus* (σεὶστρον, a rattle).

BATRACHIA.

The Batrachians are vertebrates, such as the Cæcilians, Salamanders, Toads, and Frogs, the most of which are affected by a metamorphosis, during which a branchial and fish-like respiration is changed to one in which the main dependence is placed on lungs. Whether breathing by means of gills in the earlier stages, or by lungs in the later, these animals are possessed of a supplementary cutaneous respiration. It is by the aid of the latter that they are enabled to pass periods of several months to a couple of years buried in the earth or mud during hibernation. Moisture is at all times absolutely necessary; deprived of it they soon die. The skin is naked, either smooth or rough. In cases the skin over the whole body is glandular; in others the cutaneous glands are aggregated in particular portions of the body, as the parotoids of Toads and some Salamanders. A few of the snake-like batrachians have rudimentary scales hidden in the skin. The slough is stripped off more or less entire, and generally eaten. The gills are retained by certain forms throughout their whole existence; in these, however, the lungs are partially developed, and the respiration is at the same time branchial and pulmonary. The heart has but a single ventricle, and the atria are incompletely separated. There are two occipital condyles. For the most part, the very young feed on vegetation; in such the intestine is elongate. Those beginning their independent existence after the tadpole stage has been passed, and the later stages of all members of the class, are carnivorous. The prey is swallowed entire. There are a few instances in which the embryo is developed and the young hatched in the oviduct. Commonly the eggs are fertilized externally, as or after they are laid. Eggs of batrachia have been favorites of embryologists in their researches; it was in them Prevost and Dumas first noticed the cleavage masses, and in them Newport saw the spermatozoon creep through the outer envelopes to the yolk. We know no species of which the bite is poisonous. The nearest approach to venom is in the acrid, milky secretion of the parotoids, which produces considerable irritation when brought in contact with the membranes of eyes or mouth.

Young specimens reproduce lost portions of the body with great readiness. The flesh of many species is good for food.

This class contains three orders. To the first or footless order the name *Apoda* is applied; another title for the same has been *Cœcilia.* To the second, in which feet and tail are present, the name *Urodela* is given; this has also been called *Ichthyodi.* And the third, having feet but lacking a tail in the adult forms, is known by the name *Anura.*

The Apoda are snake-like or vermiform. Some of them are very long and slender, others short and thick. As the name indicates, they are without feet. The tail is short. The skin is smooth, slimy, and arranged in transverse folds, between which rudimentary scales are sometimes found. Usually but a single lung is developed. As might be expected from their habits, burrowing in the ground to feed on worms, insects and the like, the sight is somewhat imperfect, the eyes being partially hidden under the skin. The young resemble the adults; the metamorphosis is slight. Apoda are found between the tropics of both old and new worlds. The only North American species yet found were taken in southern Mexico.

In Urodela limbs and tail are present. The number of limbs varies. When there are but two, as in *Siren*, the hinder are lacking. The earlier or larval stages resemble the fishes in means of breathing and progressing. *Siren*, *Proteus*, and *Necturus* have persistent branchiæ, and their lungs remain rudimentary. The majority develop lungs and lose the gills. After the gills are resorbed, the branchial openings close in most cases; a few, as *Menopoma*,* retain a small opening through life. Very young larvæ have a cutaneous gular flap, free at the hinder margin, which extends backward over the branchial arches and the isthmus between them; it unites first with the skin of the sternal region, and later, as the gills disappear, with that of the shoulders. The process is similar in larvæ of those Anura in which one side is entirely closed and a small passage is left for the passage of the water on the other. Many species spend the greater portions of their lives in damp localities on the land rather than in the water. Those preferring the land are marked by greater roundness of the tail, the aquatic forms having this organ compressed and expanded. There are teeth on both jaws, and most often on the palate. The tongue is pedicellate in some, has free margins in others, or is attached along the center in others. The toes are without claws.† The fore legs appear first.

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* *Cryptobranchus.*

† Except *Onychodactylus.*

When first seen they are fleshy buds. These elongate, and the rounded extremity shows signs of dividing into two. One of the two becomes the inner finger; on the outside of the other the third finger pushes out, and beyond the latter toward the wrist the fourth. The hind limbs appear in similar manner. A single toe is formed of the inner lobe, the outer being one, or becoming two, three, or four according to the genus. In certain genera there is much variation in regard to number of digits; *Proteus* is a good instance; Amphiuma is another. Of twenty-six specimens of *Amphiuma tridactylum*, twenty have three toes, the normal number, to each foot, and among the others occur the following one has one toe on each hind foot; one has one variations: to the right hind foot and two to the left; two have single toes on the right fore foot; another has one, and still another has two on the left fore foot.

Salamandra atra is one of the cases in which the young are hatched in the oviduct. The eggs of some are fertilized in the oviduct during copulation; those of others are thrown free into the water to come in contact with the sperm emitted by the male at the same instant. According to accounts recently published by M. Gasco, the female Axolotl finds the spermatophore which has been deposited by the male, and placing the cloacal opening over it introduces a portion, and thus secures fertilization. It is generally conceded that the males are more numerous than the females of species of this order. One of the oddest forms is *Pleurodeles*, in which the ribs extend through the skin on the flank.

The *Urodela* belong to the temperate regions of the Northern hemisphere. Most of them are found in North America. The largest known is the *Megalobatrachus* of Japan. Of the North American, the largest is the aquatic genus *Menopoma*.*

The ANURA or tailless Batrachia have short bodies and short necks. The vertebræ are few, and in body or neck comparatively immovable. Generally the hind limbs are longer and stronger. There are four digits on the hand and five on the foot. Except in a few species of those living in trees, there are no webs between the fingers. *Rhacophorus* is the most marked exception; it has such extensive webs between fingers and toes as to be able by their aid to sail long distances in the manner of flying lizards or squirrels. Webs are common to the aquatic species, as in frogs, *Ranidæ*. Terrestrial frogs are more or less completely without the palmation. In *Cystignathidæ* the toes are free. *Pipa*, the Surinam Toad, one of the group *Aglossa*, or

***Cryptobranchus.*

tongueless Anura, has star-shaped extremities to the fingers, which are probably sensitive tactile organs. *Dactylethra*, the clawed frog of Africa, belonging to the same group, has claws on its toes. Of the group possessing tongues, *Opisthoglossa*, those living in trees have fleshy bulbs or disks on the ends of the digits, by means of which they cling to smooth surfaces. The tree frogs, *Hylidæ*, exhibit this structure at its greatest development. Many species of the order have horny processes on the feet for burrowing. The males of some develop horny claws or tubercles on the inside of the thumbs or on the breast in the coupling season.

All of the *Anura* begin life as tadpoles, breathing and moving like fishes. They undergo a complete metamorphosis in taking on the form of the adult. Fertilization takes place externally, the male grasps the female tightly around the body, and the spermatic liquid is emitted as the eggs are extruded. Usually the males are smaller and more numerous. Habits vary much in regard to care of eggs. Our common Toads and Frogs leave them to care for themselves in the pools in which they are laid. The male of the obstetric Toad, *Alytes*, carries the eggs until they are about to hatch attached to his thighs, and then he enters the water. The male of the Surinam Toad, *Pipa*, places them carefully on the back of the female, and the skin rises around each, enclosing it in a little cup, within which the metamorphosis is effected. *Nototrema* carries the eggs in a pouch on the hinder part of the back. *Hylodes martinicensis* lays the eggs in the axils of leaves, and transforms so soon after hatching that it can hardly be said to have a tadpole stage. The larva of the Bull Frog, *Rana catesbyana*, remains a tadpole from one to several years. Many of the young feed upon vegetation for a time, afterward becoming carnivorous. M. Fernand Lataste has recently called attention to series of pectinate fringes or teeth outside of the horny lips of the tadpoles, and M. Héron-Royer finds so much variation in the various genera as to aid him in classification.

As the lungs and limbs develop, the intestine is shortened and the tail resorbed. The lower jaws are toothless.* As in toads, *Bufo*, some are entirely without teeth in the adult forms, and others, as the frogs, *Rana*, are in possession of teeth on upper jaws and on the roof of the mouth between the inner nostrils. The eyes are most often prominent and very keen. The inner eyelid is transparent. An East Indian genus, *Megalophrys*, and another from South America, *Ceratophrys*, have supraciliary

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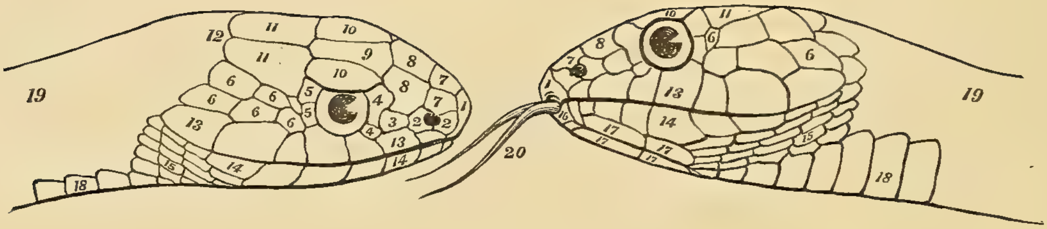
*Except in *Amphignathodontidæ* and *Hemiphractidæ*.

prominences, which give them a fantastic appearance. The hearing is very quick. The tympanic membrane is generally exposed on the side of the head, and in certain species is very large. In *Opisthoglossa* the tongue is used in capturing the prey. Most often it is attached in front, and the hinder portion can be thrown forward out of the mouth; when not so free the whole tongue is pushed forward. The food consists of worms, insects, etc., and occasionally of small vertebrates. Several large species are said to catch fish. The latter, however, are well able to retaliate, and the batrachians furnish food for numbers of the fishes. A large number of the species have voice. A special apparatus for its production, possessed by the males, consists of a pair of membranous gular sacs, sometimes a single one, under the floor of the mouth, with which they communicate by a couple of slits. These sacs are either covered by the skin or, in a few instances, there are openings through which they are protruded when inflated with air from the lungs. The largest species of the order is the Marine Toad, *Bufo agua*, of South America; the largest North American is the Bull Frog, *Rana catesbyana.* The number of species north of Mexico is about forty for each of the Anura and Urodela.

NORTH AMERICAN REPTILES.

PART I.

OPHIDIA.—Serpents.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1. Rostral.
2. Nasals.
3. Loreal.
4. Preoculars or Anteorbitals.
5. Postoculars or Postorbitals.
6. Temporals.
7. Internasals.
8. Prefrontals.
9. Frontal.
10. Supraciliaries or Supraoculars.
11. Parietals.
12. Occipitals.
13. Labials.
14. Infralabials.
15. Gulars.
16. Mental.
17. Submentals.
18. Ventrals.
19. Dorsals.
20. Tongue.

SYNOPSES AND DESCRIPTIONS.

OPHIDIA.

Brongniart, 1800.

Vertebrate animals with elongate more or less cylindrical bodies, in which head, neck, trunk and tail have the same axis; blood aerated in lungs; bones of the head articulated by means of elastic ligament, which, in the jaws especially, admits of considerable distention; limbs absent or rudimentary; without a movable eyelid or external evidence of ears.

Not venomous;
    no fold under the chin;
        wormlike; head and tail not distinct from the trunk;
            no claws at the side of the vent
                SCOLECOPHIDIA.
    a fold under the chin; head more or less distinct;
            a claw at each side of the vent
                ONYCHOPHIDIA.
            without claws or venom glands
                ACACOPHIDIA.
Venomous;
    without claws; head more or less distinct;
            with venom-secreting glands and fangs
                TOXICOPHIDIA.

SCOLECOPHIDIA.

SCOLECOPHIDES.

Dumeril & Bibron, 1844.

Body elongate, cylindrical; head short, indistinct; tail short, thick. Eyes imperfect, in some species invisible, covered by the ocular shields. Mouth small, inferior. Ligamentary attachments of the bones of the head possessing but little elasticity. No fold under the chin. Teeth few, on either the upper jaw or the lower, none on the palate. Tongue forked, exsertile. Scales smooth, imbricate, similar on back and belly.

Found under rocks or pieces of wood, or in the earth, where they burrow to feed on worms, larvæ of insects, etc.

TYPHLOPIDAE.

TYPHLOPINAE.

Teeth in the upper jaw
TYPHLOPS.

STENOSTOMINAE.

Teeth in the lower jaw;
  crown-shields resembling those of the
    colubers ANOMALEPIS.
  crown-shields scale-like
    STENOSTOMA.

TYPHLOPIDAE.

Fitzinger, 1826.

TYPHLOPINAE.

TYPHLOPS.

Schneider, 1801.

Teeth on the upper jaw. Rostral shield well developed, reaching the upper part of the snout. Nasal vertical, divided or entire. Crown with scales similar to those of the back. Labials four, rarely three, anterior small. Hab. All tropical and subtropical regions.

TYPHLOPS LONGISSIMUS.

OPHTHALMIDION LONGISSIMUM *Dum. & Bibr.*, 1844, *Erp. Gén. VI*, 263.
TYPHLOPS LONGISSIMUS *Jan*, 1861, *Arch. per la Zoöl. I*, 182.

Body long, slender, cylindrical; head depressed, rounded; tail short, rounded at the extremity, armed with a small spine. Rostral linguiform.

DSI

Nasal small, rectangular, half as wide as the rostral at the mouth. Preoculars twice as high as wide. Oculars smaller than the preoculars, similar in shape. Crown-shields small; one prefrontal, one frontal, two supraoculars, and two parietals. Scales small in 22 longitudinal rows; transverse rows 512.

Anterior portion of the head yellowish; body uniform ashy gray. Hab. North America. (From descr.)

TYPHLOPS PERDITUS.

Peters, 1869, *Monatsberichte Berl. Akad.*, 435.

Eyes invisible. Nostrils at the end of the snout. Head shields similar to those of *T. reticulatus*, except that the posterior margin of the nasorostral is much less concave and the preocular less bent forward. Scales in 18 longitudinal rows. Dorsal scales olivaceous brown with yellowish-green margins. Beneath and on the end of the snout greenish-yellow. (From descr.) Said to be from Orizaba, Mexico. Total length 0^m, 285; tail 0^m, 004.

TYPHLOPS BASIMACULATUS.

Cope, 1866, *Pr. Ac. N. Sc. Phil.*, 320.

Body compressed posteriorly; head depressed, muzzle from above rounded truncate; tail narrowed, obtuse. Rostral narrow. Eye invisible, ocular extending to labials. A preocular, little wider than ocular. Supralabials four. Scales in 18 longitudinal rows. Yellow, scales of seven dorsal rows with a large brown spot at the base. Top of head and end of tail immaculate. Cordova and Orizaba, Mexico. (From descr.)

TYPHLOPS (IDIOTYPHLOPS) EMUNCTUS *spec. nov.*

Very long, slender, enlarging toward the tail; head not distinct from the neck, slightly depressed, rounded, muzzle extending beyond the lower jaw; tail not longer than the thickness of the body at the vent, rounded to a point. Eye small, indistinct or invisible. Shields of the side of the head small. Rostral large, bent far back on the head, lateral margins concave, rather narrow, widening toward the top of the head, followed by two short, broad verticals, acute angled laterally, of which the posterior is shorter. Nasal deeper than long, divided diagonally from end to end; nostril opening forward. Above the nasal a small plate has the form of a spherical triangle with concave sides. Labials four; posterior scale-like; anterior largest, beneath the nasal and extending forward in a long point between it and the rostral; third extending obliquely backward beneath the ocular, with which it is in contact at the angle. The triangular internasals are widely separated by the rostral. Below the internasal, a small rhomboid plate rests in a notch between the second and third labials, and behind this plate lies the small preocular.

Scales small, hinder margin rounded, in 22 rows, similar above and beneath. Silvery brown, snout and lips light yellow. Hab. Panama and northward.

ANOMALEPIS *Jan.*

Teeth on the upper jaw. Rostral plate narrow, hardly reaching the top of the head. Nasal grooved behind the nostril. Head with large plates on the crown. Labials two. Scales smooth, lustrous, small in the ventral rows. Anal divided.

ANOMALEPIS MEXICANUS.

Jan, 1861, *Icon. Gén. Ophid., Livr. I, pl. V.*

Body long, slender, subcylindrical; head indistinct; tail very short, bluntly rounded on the end. Muzzle broad, rounded. Mouth inferior, outline not regularly curved. Eyes visible through the ocular. Rostral narrow, scarcely reaching the top of the head. A pair of broad frontals. Frontal shield-shaped, nearly as broad as long. Supraoculars larger than the ocular. Ocular smaller than the preocular. Nasal with a groove behind the nostril. Loreal larger than the first labial. Labials two, anterior small, quadrangular; posterior larger, separated from the preocular by a narrow, elongate plate, and from the ocular by another that is similar but shorter. Lower labials five, small. The scales in contact with the head shields are larger than those farther back. Scales small, smooth, glossy, those of the belly not larger. Anal bifid.

Color reddish-brown, very light below. A yellowish-white border on the scales produces the appearance of reticulations. (From Jan.) Hab. Mex.

STENOSTOMA *Wagler.*

Body slender, cylindrical; tail short. Muzzle large, extending beyond the lower jaw. Mouth inferior. Teeth on the lower jaw (3–5). Eye visible through the ocular. Nostrils anterior. Nasal grooved or divided. Rostral large, reaching backward on the top of the head. Ocular large.

Labials two to three, rarely four, not in contact with the rostral. Anal entire, larger than the adjacent scales.

Tropical and semi-tropical regions.

- *Scales in 14 longitudinal rows;
  - two labials, separated by the ocular;
    - a small plate between the ocular and the medial row;
      - lower labials four *dulce.*
    - no small plate between ocular and medial row;
      - lower labials five *tenuiculum.*
  - three labials, two in front of the ocular;
    - a small plate between ocular and medial row *myopicum.*
- Scales in 13 rows *phenops.*

STENOSTOMA DULCE.

RENA DULCIS *Baird & Girard,* 1853, *Cat. N. A. Serp.*, 142.
STENOSTOMA DULCE *Jan,* 1861, *Icon. Ophid., Livr. II, pl. V.*

Body long, slender, cylindrical; head indistinct, slightly depressed, muzzle rounded; tail short, thick, ending in a spine. Mouth semilunar, inferior. Eyes distinctly visible. Rostral reaching on the top of the head nearly as far back as the eyes. Nasal obliquely divided in two parts, nostril between, separated from the ocular by a single labial. Ocular large, separated from the medial series by a single plate. A large labial behind the ocular. Lower labials four. Scales smooth, lustrous, in 14 rows, ventral rather smaller, median dorsal row in contact with the rostral and separating the supraoculars.

Reddish-brown above, reddish-white beneath. Hab. Texas.

STENOSTOMA TENUICULUM, *sp. n.*

Body long, slender, cylindrical; head indistinct, slightly depressed, rounded on the muzzle; tail short, thick, ending in a point. Mouth semilunar, inferior. Eye small, distinctly visible. Rostral reaching on the head nearly as far back as the eyes. Nasal in two parts, nostril between, separated from the ocular by a single labial. Ocular large, in contact with the vertebral series (*i. e.*, oculars separated by a single scale on the top of the head). A large labial behind the ocular. Lower labials five. Scales smooth, glossy, posterior margins rounded, in 14 rows, medial row of the belly larger, median dorsal row in contact with the rostral and separating the oculars.

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*See Synopsis, p. 130.

Light greyish-brown, white beneath.

Described from San Luis Potosi, Mex.

STENOSTOMA MYOPICUM *spec. nov.*

Body long, slender, subcylindrical; head indistinct, slightly depressed, muzzle rounded; tail short, thick, abruptly rounded downward and from the sides to the terminal spine. Mouth semilunar, inferior. Eyes distinctly visible. Rostral broad, reaching back on the head to a vertical from the eye. Nasal in two parts, nostril between. Two labials between nasal and ocular, anterior lower and beneath the nasal, posterior higher, extending upward in a sharp angle in front of the eye. Ocular large, rather narrow, separated from the medial row by a small plate. A large labial behind the ocular. A pair of temporals, anterior resting on the posterior labial and in contact with the ocular. Lower labials five, anterior and posterior small. Scales smooth, glossy, rounded on the posterior margin, in 14 rows, medial row of belly slightly larger, median dorsal in contact with the rostral, separated from the oculars by a small scale. Anal entire.

Dark reddish-brown above, white tinged with purple beneath. Largest specimen 8 inches; tail, .43 in. Hab. near Tampico, Mex. Dr. Edw. Palmer.

This species bears some resemblance to *S. bicolor*, Jan. It is distinguished by the height and shape of the anterior labials, and the narrowness of the upper half of the nasals.

STENOSTOMA PHENOPS.

Cope, 1875, *Jour. Ac. N. Sc., Phil.*, 128.

"Scales in 13 rows. The eye is distinct, and the nareal suture extends to the rostral plate. The lower surfaces are without marking, but the scales of the upper surface are black, with pale borders. There are three white spots: one on the end of the rostral plate, one at the apex, and one on the under side of the tail. Total length, 0^{m}.156; tail, .009. The same species was obtained near Coban, Guatemala, by Henry Hague." Tehuantepec. Known only from the description.

ONYCHOPHIDIA.

With rudimentary limbs, the only external evidence of which is a claw on each side of the vent. Pupil vertical.

Body nearly cylindrical;
  head rather indistinct from the neck;
    tail usually short, thick, non-prehensile
ERYCIDAE.
Body compressed;
  head distinct from the neck;
    tail generally prehensile; larger teeth in front
BOAEIDAE.

ERYCIDAE.

Body nearly cylindrical; head small, rather indistinct; tail non-prehensile, short, thick, usually blunt. Eyes small, pupil vertical. Head-shields irregular. With a spur on each side of the vent.

Asia, Africa, E. Indies, America.

CHARINA *Gray*.

Body stout, subcylindrical; head small; tail short, thick, blunt. Eyes small, pupil vertical. Head-shields irregular. Nasals in contact behind the rostral. Nostrils lateral. Labials varying in number, reaching the orbit, or subdivided and separated from it by small suborbitals. Loreals one or more. Scales smooth, imbricate. Subcaudals one row, sometimes irregular. Anal entire. Spurs small. Puget Sound to Mexico.

CHARINA BOTTAE.

TORTRIX BOTTAE *Blainville*, 1835, *Nouv. Ann. du Mus.* (*III*), 290, *pl.* 26, *f.* 1–1*b*.
CHARINA BOTTAE *Gray*, 1849, *Cat. Snakes Brit. Mus.*, 113.

Body moderately elongate, subcylindrical, slightly compressed, little fusiform; head small, rather indistinct; tail short, thick, blunt. Eye small, pupil vertical. Mouth cleft moderate, outline nearly straight. Snout prominent, broad, rounded. Head-shields and number of scales on the body varying greatly. Rostral broad. Prefrontals varying, usually two pairs. Frontal broader than long. Parietals broad and short, or dissected. Supraorbital short, broad. Nasal in two parts, nostril between; the anterior portions are longer, and meet on the top of the snout, or are subdivided to form a pair of internasals. One or more loreals. One or more ante and two or more postorbitals, or the eye surrounded by a ring of eight or ten scales. Labials nine or more, anterior commonly higher. Infralabials ten or more, anterior broader or subdivided. Two or three pairs of small submentals, decreasing in size backward. Scales small, smooth, number of rows varying greatly (highest noticed, 45). Ventrals varying in width and number (near 200). Anal entire.

Color uniform leaden to reddish-brown, light yellowish below.

CHARINA TRIVIRGATA.

LICHANURA TRIVIRGATA *Cope*, 1861, *Pr. Ac. N. Sc., Phil.*, 304.

Rostral prominent, elevated, recurved, five-sided. Loreals five. Ocular ring of ten scales. Labials 14–15, anterior higher. Infralabials 15, anterior five longest. A short mental fissure. Scales in 40 rows, inferior a little larger. Total length, 25 inches; tail 4. Brownish-yellow, lighter below. Belly and flanks speckled with reddish-brown. Back with three deep, reddish-brown bands from muzzle to end of tail, median four, lateral five, and separating spaces three and a half scales in width. (From descr.) Hab. Lower Cal.

Possibly a variety of the preceding.

BOAEIDAE.

Body more or less compressed; head distinct; tail generally prehensile. Pupil oblong, erect. Larger teeth in front. Submental fold conspicuous. A spur or rudimentary limb on each side of the vent.

BOA *Linné.*

Body elongate fusiform, slightly compressed; head distinct, flattened on the crown, broad posteriorly, muzzle prominent; tail prehensile. Nasals entire or divided. Nostril lateral. Teeth smooth, larger forward. Labials not pitted, short, numerous. Scales covering the top of the head and the loreal region and surrounding the eye, small. Dorsal scales small, smooth, flat. Anal entire. Subcaudals simple.

BOA IMPERATOR.

Daudin, 1803, *Hist. Rept. V*, 150.

Body robust. Muzzle truncate, outline of extremity nearly vertical. Scales of head, face, and temples small, rather larger than those of *B. constrictor*. Eye surrounded by 16 to 18 scales, of which several are in contact with the labials. Labials about 20, infralabials 20 to 22. Scales in 65 to 69 rows, outer broader. Ventrals 233 to 240; subcaudals 52 to 57. Brownish, varying from light to dark (in alcohol), with a dorsal series of quadrangular brown spots, emarginate anteriorly and posteriorly, separated from the series of triangular brown spots on the upper portion of the flank by an interrupted narrow line of light color, which is most distinct opposite the spots. Upper spots of the flank larger and more distinct. An irregularly placed series on the outer rows of scales and the edge of the abdomen. Spots darkening toward the tail, often with lighter centers. A brown line on the head from the frontal region to the neck. A brown line from behind the angle of the mouth through the eye to the loreal region, spreading toward its extremities. A bar from the eye to the lip. A pair of spots on each side of the lower jaw. Rostral with a spot. Scales irregularly punctulate or spotted. Mex.

I have little doubt that this will eventually be degraded to the rank of a variety. Specimens at hand from the Isthmus of Darien are intermediates between this species and *B. constrictor*.

BOA CONSTRICTOR.

Var. isthmica.

Body stout, compressed; head distinct; snout broad, truncate; tail short, prehensile. Rostral large, broader near the upper edge, concave at the sides and below, rounded above, surrounded by scales larger than the others of the head. Nasal divided. Eye surrounded by eighteen or nineteen scales. Several larger scales in front of the oculars. Two rows between oculars and labials. Labials 22–23. Infralabials 25–27. Scales small, flat, smooth, in 78 rows, outer broader. Ventrals narrow, 246. Subcaudals 57.

Ground color light greyish (in alcohol). Pattern of markings as in *B. constrictor*. Transverse brown bands of the back twenty-five, posteriorly united by the darker margins with the triangular spot on the upper part of the flank. Beneath the latter on the flank there is a series of oblong, rounded spots, each enclosing a rounded spot of lighter color. A series of more or less broken quadrangular black spots on each side of the belly includes scales of the outer row. The spots unite on the tail so as to form a dorsal and subcaudal row. A light brown band from rostral to neck includes several light spots on the occipital region. A brown band with white margin extends from a point close behind the angle of the mouth through the eye to the nasal, broadening on the loreal region, and descending across the mouth to the submentals. A short distance in front of the angle of the mouth on the lower jaw there is a rounded brown spot surrounded by a white ring, by which it is separated from the edge of the lip. An angular black spot descending from the eye does not reach the labials. Central America.

BOA MEXICANA *Rapp.*

BOA DIVINILOQUAX *var. Mexicana Jan,* 1864, *Icon. Ophid., Livr. V, pl. IV.*

The figure by which this species is known is that of a serpent more closely allied to *B. imperator* than to *B. diviniloquax.* The muzzle is broader and more vertically truncate than in the former, and the ground color is more bleached. The pattern of coloration is the same, but some of the lines of the head and the spots and punctulations of the flanks have become obsolete. Nasals divided. Suborbitals in contact with labials. Scales in 55 longitudinal rows.

ACACOPHIDIA.

Head and tail more distinct from the body, and eyes and teeth more perfectly developed than in the *Scolecophidia;* without claws at the side of the vent, as in the *Onychophidia;* and without poison-secreting glands and fangs, as in the *Toxicophidia.*

This group includes all the common, non-venomous snakes of the ground, trees, or fresh waters. It contains but a single family. For convenience this is divided into subfamilies, nearly corresponding to what have heretofore been accepted as families, and for which the old names have been retained.

COLUBRIDAE.

Elongate, tapering, compressed; head broad; pupil generally elliptical	Dipsadinae.
Moderately slender, subcylindrical; head moderate; pupil elliptical	Scytalinae.
Slender, long; head long, narrow; eyes large; pupil round	Dendrophinae.
Fusiform, slender to stout; head broad behind; posterior maxillary teeth usually larger; scales generally keeled	Natricinae.
Elongate, tapering to head and tail; head distinct from the neck, moderately broad; crown-shields regular; loreal usually present; teeth smooth	Colubrinae.
Subcylindrical; head more or less distinct, short, shields commonly regular; scales rarely keeled	Coronellinae.
Cylindrical; head short, rather indistinct; usually some head-shields united; scales smooth or keeled	Calamarinae.

DIPSADINAE.

Tree snakes. Bodies more or less elongate and compressed, tapering to head and tail; head large, distinct, somewhat triangular, broad behind, depressed, muzzle broad and rounded; tail short to long and slender. Eye large to very large, pupil generally elliptical. Nostrils lateral. Teeth varying much. In the majority of the species the posterior maxillary teeth are longer and grooved. Head-shields nine, short, broad. Scales imbricate, smooth, rarely keeled, generally the vertebral row larger.

Teeth equal, smooth;
anal entire; scales in 13–17 rows,
vertebral series larger
LEPTOGNATHUS.
Posterior maxillary teeth longer, grooved;
anal entire; scales in 19–27 rows,
vertebral series larger
DIPSAS.
anal divided, rarely entire; scales in 19–23 rows,
dorsal series similar
SIBON.

LEPTOGNATHUS.

Duméril, 1852.

Body long, more or less compressed; head subquadrangular, high, distinct from neck; tail medium. Eye moderate, pupil erect. Teeth equal, smooth. Head-shields nine, short, broad. Rostral broad, low. With or without a distinct loreal. Orbitals 1—2+2—3, suborbitals sometimes present. Scales moderate, rarely keeled, in 13–17 rows, vertebral generally larger. Anal rarely divided. Subcaudals in two rows.

Hab. Mexico to the Argentine Republic; India.

Scales keeled in vertebral series, rows 15–17;
loreal distinct *fasciatus.*
Scales smooth, rows 17;
loreal distinct *dumérilii.*
Scales smooth, rows 15;
loreal and anteorbital fused;
transverse bands narrow *nebulatus.*
transverse bands broad *dimidiatus.*

LEPTOGNATHUS FASCIATUS.

TROPIDODIPSAS FASCIATA, *Gthr.*, 1858, *Cat. Col. Snakes*, 181.

Slender; head oval, crown slightly flattened, muzzle broad; tail long, slender. Eye large, pupil erect. Head-shields broad. Frontals bent on the side. A loreal. Orbitals 2–2. Temporals 1+2. Labials 6–7, penultimate largest. Infralabials 7, fifth largest. Submentals two or three pairs, second half as large as first. Scales in 15–17 rows, some of the dorsals with keels. Anal entire. Subcaudals in two rows.

Dark brown or black. The light color of the throat and chin-shields extends upward as an occipital collar. Flanks with widely separated, wedge-shaped, vertical bars of light color, which frequently meet in their points on the back, forming transverse bands to the sides of the belly. Belly much spotted with dark posteriorly.

Hab. Mexico and Central America.

LEPTOGNATHUS DUMERILII.

Jan, 1870, *Icon. Livr. XXXVII, pl. V, fig.* 2.

Scales smooth, in 17 rows. The principal difference between this species and the preceding is in the carination of the scales. It is altogether likely that individual variations in this respect will do away with its value, in which case the form cannot even stand as a variety.

LEPTOGNATHUS NEBULATUS.

PETALOGNATHUS NEBULATUS *Duméril*, 1852 (1853), *Mem. de l'Acad. Sci. XXIII*, 466.

Slender, elongate, much compressed; head large, distinct, crown slightly convex, muzzle high; tail slender, tapering. Eye large, pupil erect. Head-shields short, broad. Rostral as broad as high. Nasal in two parts, nostril principally in anterior. Loreal and preocular fused. One preocular, sometimes a small plate at its lower posterior angle. Postoculars two. Temporals 1+2+3. Labials seven, fourth and fifth below the eye, sixth largest. Infralabials nine, sixth largest. Submentals three pairs (2—3), anterior larger. Scales smooth, in 15 rows, several of the dorsal broader, the median broader than long. Ventrals 185—197. Anal entire. Subcaudals 87—90 pairs.

Greyish-brown, mottled with brown, with more or less irregular narrow transverse white-edged bands of brown. A series of large blotches on each side of the abdomen, apparently separated at the median line, more or less confluent with the dorsal bands, and frequently with them forming complete rings around the body. Belly yellowish, clouded and spotted with brown. Head brown, irregularly marked with white (yellow). First brown band immediately behind the head. Tail darker. Total length 17 inches; tail 4. Total length 14½ in.; tail 3¾. Hab. Mexico to Brazil; West Indies.

LEPTOGNATHUS DIMIDIATUS.

Günther, 1872, *Ann. & Mag. Nat. Hist., IX*, 31.

Long, slender, much compressed; head broad, short; tail less than one third of the total length. Eye rather large, pupil erect. Internasals small. Prefrontals large, bent down on the face, entering the orbit. Outer edges of frontal nearly parallel. Loreal and preocular fused. Postoculars two. Temporals 1 + 2. Submentals three pairs, anterior largest, crescent-shaped; middle longer than broad, posterior divergent. Labials eight, fifth and sixth in orbit. An azygos scale-like shield under the chin, surrounded by the first pair of infralabials, the mental and submentals. Second to sixth infralabials in contact with anterior submentals. Scales smooth, in 15 series, vertebral not larger. Ventrals 186. Anal entire. Subcaudals 98 pairs.

Body and tail with broad black rings, separated by narrow, whitish interspaces. Twenty-five rings on the trunk, sixteen on tail; white interspaces subdivided by a narrow black transverse line. Upper parts of head black; with small, irregularly placed whitish spots, and a pair of large spots of the same color on the neck, forming a sort of collar. Anterior chin-shields black. (From Günther.) Hab. Mexico.

DIPSAS.

Laurent, 1768.

Slender, elongate, compressed; head very large, distinct, depressed, broad behind, angles rounded, muzzle blunt; tail slender, tapering. Eye moderately to very large, pupil erect. Posterior maxillary teeth longer, grooved. Rostral broad, low. Head-shields nine, broad. Nasal divided. A loreal, rarely fused with orbital. One preocular. Postoculars two to three. Scales smooth, rarely keeled, in 19—27 rows, vertebral larger. Anal entire or divided. Subcaudals in two rows. Hab. Mexico to Brazil; Australia; Africa.

(*Himantodes.*)

DIPSAS CENCHOA.

COLUBER CENCHOA *Linné*, 1758, *Syst. Nat. Ed. X*, 226.

DIPSAS CENCHOA *Fitzinger*, 1826, *Neue Class Rept.*, 59.

Very long and slender, compressed, neck and tail very small; head large, very broad, muzzle short, crown convex; tail near one third of the total. Eye large, pupil erect. Mouth deeply cleft, curved. Internasals about one third as large as the prefrontals. Rostral subtriangular, broader than high. Nasal divided, nostril mainly in anterior portion. Loreal small. Preocular narrow, high. Postoculars two (sometimes one), small, lower resting on the fifth labial. Labials eight, fourth and fifth in orbit, sixth and seventh larger. Infralabials nine, sixth larger. Submentals two pairs, anterior larger, posterior separated by small scales. Scales lozenge-shaped, smooth, in 17 rows, medial and outer broader. Ventrals 244 (228—259). Anal bifid. Subcaudals 134 pairs (134—174.)

Light greyish-brown, scales more or less punctulate with brown. Anteriorly with dark-edged transverse blotches of brown; posteriorly these become smaller, do not descend on the flank, and are very irregular and broken. Hinder portion of body with spots irregularly distributed on the lower portions of the flanks. Specimen described from Acapulco, Mex. Total length 33 inches; tail 10 in. Hab. Mexico to Brazil.

DIPSAS LEUCOMELAS.

HIMANTODES LEUCOMELAS *Cope*, 1861, *Proc. Ac. N. Sc. Phil.*, 296.

Lateral borders of frontal nearly parallel, longer than the anterior. Loreal higher than long. Two preoculars, not in contact with the frontal. Infralabials ten, sixth largest. Scales smooth, in 17 rows, vertebral larger, broader than long. Total length about three and one half times that of the tail.

Greyish, crossed by about twenty-nine black bands, which encroach on the ends of the ventrals. About eighteen spots on the tail. Spotted or dotted with black on the belly. A pair of black spots from the supraciliaries over the occipitals to the neck. A band of black across the prefrontals. Scale pores single. (Unknown to me.) Vera Cruz.

SIBON.

Fitzinger, 1826.

Moderately long, slightly compressed, tapering to head and tip of tail; head distinct, large, broad, depressed, with broad muzzle; tail moderate. Eye medium, pupil oblong, erect. Posterior maxillary teeth longer, grooved. Head-shields regular. Nasal in two parts, nostril between. One or more loreals. Oculars 1 to 3—2 to 3, sometimes with suboculars. Scales smooth, imbricate, in 19—23 rows, dorsal not larger. Anal and subcaudals divided. Hab. Texas and Mexico to Brazil.

Long, slender;

Scales in 23 (21—23) rows, ventrals 266 (±) *biscutatum.*

Scales in 21 rows, ventrals 206—210 (±) var. *latifasciatum.*

Moderate;

Postmaxillary tooth longer, grooved;

Scales in 19—25 rows, ventrals 181—188 (±) *annulatum.*

dorsal series broad transverse bands var. *septentrionale.*

dorsal series of spots rather small *torquatum.*

Postmaxillary teeth in continuous series, not grooved;

Scales in 19 rows; ventrals 179—182 (±) *discolor.*

SIBON BISCUTATUM.

DIPSAS BISCUTATA *Dum. Bibr.*, 1854, *Erp. Gén. VII,* 1153.

Long, slender, compressed; head distinct, broad oval, depressed, snout prominent, broad, rounded; tail moderate, tapering. Eye large, pupil erect. Mouth-cleft deep, slightly curved. Anterior maxillary teeth longer; posterior large, isolated, grooved. Head-shields nine, broad. Rostral broader than high. Nasal divided. Loreals two to four. Orbitals 2 to 3—2 to 3. Temporals irregular. Labials 9—10, fourth and fifth usually under the eye, the four preceding the last larger. Infralabials 11—13. Submentals two pairs; posterior small, not in contact. Scales in 23 rows. Ventrals 264 (±). Anal bifid. Subcaudals 94 (±) pairs.

Light brown, punctulate, with broad transverse bands or rhombs of brown, which are paler in the center and separated by spaces about equal to their width. The bands become narrower toward the abdomen, at the edge of which there is an alternating series of spots. Abdomen sprinkled with brown; subcaudals with blotches. A light band across the head behind the internasals; another across the frontal passes through the eyes to the angle of the mouth. A V-shaped light spot on the vertex and a light collar behind the occiput. (From D. & B. and Jan.) Hab. Mexico and southward.

var. LATIFASCIATUM.

DIPSAS BISCUTATA var. LATIFASCIA *Peters*, 1869, *MB. Berl. Acad.*, 877.

Rows of scales 21—22. Ventrals 206—210. 13—14 brown bands on the body; 5—6 on the tail. (From Peters.) Puebla, Mexico.

SIBON ANNULATUM.

COLUBER ANNULATUS *Linné*, 1754, *Mus. Ad. Fridr. Tab.* 8, *fig.* 2.

SIBON ANNULATUS *Fitzinger*, 1826, *Neue Class. Rept.*, 60.

Moderate, tapering to head and tip of tail; head large, distinct, depressed, crown flattened, temples swollen; muzzle broad; tail medium. Eye moderate, pupil oblong, erect. Posterior maxillary teeth longer, grooved. Nasal in two parts; nostril lateral. Loreal present. Preoculars two; upper large, reaching the top of the head, lower small in a notch between the third and fourth labials, sometimes absent. Postoculars two, upper large. Temporals 1+2. Labials eight, fourth and fifth in orbit, seventh largest. Infralabials 10 (9—10), sixth largest. Submentals two pairs, nearly equal. Scales smooth, in 23 rows (19—23), similar. Ventrals 188±. Anal bifid.

Light reddish-brown, with a series of brown spots on each side of the median line, which are alternated and form a zigzag line or opposed and form transverse bands or rhombs. The number of spots varies much; in the specimen before me there are fifty on the body alone. Flank mottled with brown, lower portion with a series of spots alternating with those of the dorsal. Head of the ground color, with a brown band behind the eye, above the angle of the mouth. Belly uniform light color. Scales lustrous. Hab. Mexico to Brazil.

var. SEPTENTRIONALE.

DIPSAS SEPTENTRIONALIS *Kennicott*, 1859, *U. S. and Mex. Bound. Surv.*, *II*, *pl. VIII*, *f.* 1, *p.* 16.

Preoculars three (2—3); upper large, reaching the top of the head; lower very small. Scales in 19—23 rows, smooth.

Yellowish white (brownish), with irregular transverse bands of brown, which extend across the back to the ventrals. The bands vary much in shape and size; the specimen at hand has thirty-eight in all. Old specimens with darker colors. A band from the nostril through the eye to the hinder labial. Head mottled or blotched with brown, sometimes with a shield-shaped spot on the occipitals. Hab. Texas to Central America.

SIBON TORQUATUM.

LEPTODEIRA TORQUATA *Günther*, 1860, *Ann. & Mag. Nat. Hist.*, *pl. X*, 169.

Posterior maxillary tooth larger, separated by an interspace. Scales in 21 rows. Ventrals 174. Anal bifid. Subcaudals 44—56. Total length 16 in. 5 l.; tail 3 inches. Total length 17 in. 5 l.; tail 2 in. 3 l.

Brownish-grey, with a vertebral series of brown spots, some of which are confluent into a zigzag band; neck with a white collar, behind which there is a large brownish-black blotch. Hab. Nicaragua; Island of Laguna. (From Günther.)

SIBON DISCOLOR.

LEPTODEIRA DISCOLOR *Günther*, 1860, *Pr. Zool. Soc. Lond.*, 317.

Posterior maxillary tooth larger, in a continuous series with the other teeth, not grooved. Scales in 19 rows, smooth, rhombic, those of the sides similar to those of the back. Ventrals 179—182. Anal bifid. Subcaudals 87—88. Total length 21 in. 1 l.; tail 6 in.

Dirty white, with numerous black cross-bands extending on to the ventral plates; belly uniform whitish. Fifty-one to fifty-four black bands cross the trunk and extend to the edge of the belly; they are broader than the interspaces between, and become interrupted and spot-like on the tail. Upper part of head brown, with a whitish collar behind the occipitals. Separated from *S. annulatum* by the teeth. Hab. Oaxaca, Mex. (From Günther.)

SCYTALINAE.

Moderate, cylindrical to subcylindrical; head distinct from the neck, broad behind, crown flat; tail medium, tapering. Eye medium, pupil oblong or elliptical. Crown-shields nine. Nasal generally divided. A loreal. Preoculars one to two. Postoculars two. Posterior maxillary teeth longer, grooved. Scales smooth, in 17 to 19 rows, occasionally the vertebral series larger. Anal entire. Subcaudals simple or bifid.

OXYRHOPUS.

Wagler, 1830.

Elongate and subcylindrical to slender and slightly compressed; head moderate, a little larger than the neck, depressed, muzzle rather broad, crown flat; tail short to moderate. Eye medium, pupil elliptical, erect.

Posterior upper maxillary teeth longer, grooved. Anterior teeth equal. Crown-shields regular. Nasal divided. A loreal. Preocular one, sometimes two. Two postoculars. Scales smooth, lustrous, in 19 rows, varying rarely to 17 or 15. Anal entire. Subcaudals in two rows.

Light reddish-white; scales more or less tipped with brown; a yellowish collar	*cloelia.*
Reddish-white, with about thirty black rings around the body.	*doliatus.*

OXYRHOPUS CLOELIA.

COLUBER CLOELIA *Daudin*, 1799, *Hist. Rept. VI, pl.* 78, *p.* 330.
OXYRHOPUS CLOELIA *Günther*, 1858, *Cat. Col. Serp.*, 189.

Elongate, slightly compressed, body tapering toward the tail; head larger than the neck, depressed, rounded, crown flattened, muzzle broad; tail rather less than a fourth of the total, tapering. Eye moderate, pupil erect. Mouth-cleft but slightly curved. Crown-shields nine, broad. Rostral as high or higher than broad, bent back in a blunt angle between the internasals. Prefrontals broad, bent down on the side of the face. Frontal broad, angle between the parietals a little less than right. Parietals large. Nasal in two parts, anterior acute-angled between the rostral and first labial. Loreal small, narrow in front. Oculars 1—2. One temporal in contact with postoculars, a second below it in a notch between the labials. Labials seven to eight, third and fourth or fourth and fifth in orbit, the two preceding the last larger. Infralabials eight to nine, fifth larger. Submentals two pairs, hinder smaller. Scales smooth, lustrous, with two pores, in 19 rows. Ventrals 242. Anal entire. Subcaudals 77 pairs.

Light reddish-white, whiter below. Tips of scales slightly dotted with brown. Crown-shields and sides of face dark brown. A triangular brown patch on the back and sides of the neck, in front of which there is a yellow collar which extends forward under the eye on the labials. Throat and chin uniform white. Behind the dark patch on the neck the scales become gradually lighter. Central America.

OXYRHOPUS DOLIATUS.

Duméril & Bibron, 1854, *Erp. Gén. VII*, 1020.

Elongate, compressed; head distinct from the neck, crown flat, broad behind; tail moderate, less than one fourth of the total, tapering. Snout short, broad, rounded. Eye moderate, pupil elliptical, erect. Posterior maxillary tooth longer, grooved. Crown-shields regular. Rostral broad, low, reaching the top of the snout. Internasals much smaller than prefrontals. One preocular, not in contact with the frontal. Postoculars three (2—3). Loreal elongate. Labials eight, fourth and fifth in orbit. Two temporals in contact with the oculars. Scales smooth, in 19 rows, medial rather larger. Anal entire.

Yellowish in alcohol, reddish in life, with thirty or more black rings—more or less complete—encircling the body. The intervals on the back are of varying width, reddish-white, and spotted with black. A dark spot on the crown, somewhat broken by lighter streaks on the edges of the plates. Belly yellowish, black bands often broken or incomplete. Central and South America.

DENDROPHINAE.

Tree snakes. Slender, elongate; head very distinct from the neck, narrow, long, depressed, snout prominent; tail not distinct from the body, very slender. Eye moderate to large, pupil round. Nostrils small, lateral. Posterior upper maxillary teeth longer, grooved or smooth. Scales long, narrow, in 15 to 21 rows. Ventrals commonly with a slight keel at the side of the abdomen. Subcaudals in two rows. Tropics of both continents.

Posterior upper maxillary teeth longer, smooth; scales smooth or keeled	LEPTOPHIS.
Posterior maxillary teeth longer, grooved behind; scales smooth	OXYBELIS.

LEPTOPHIS.

Bell, 1825.

Very slender, long; head long, narrow, depressed, distinct from the slender neck. Snout produced beyond the lower jaw. Eye large, pupil round. Postoculars 2—3. Abdomen slightly keeled at the sides. Postmaxillary teeth longer, smooth. Scales in 15 to 19 rows, smooth or keeled. Subcaudals in two rows.

LEPTOPHIS MEXICANUS.

LEPTOPHIS MEXICANUS *Duméril & Bibron*, 1854, *Erp. Gén. VII*, 536.

Two postoculars. Loreal present. Labials eight. Scales in 15 rows, carinate on trunk and tail. Ventrals 157—169. Anal bifid. Subcaudals 138—154 pairs. Mexico. (From descr.)

OXYBELIS.

Wagler, 1830.

Body much elongate, slender; tail long. Head long, slender; snout very long, produced. Rostral inferior. Pupil round. No loreals. Nasal entire. Oculars 1—2. Scales smooth. Subcaudals bifid. Posterior maxillary teeth longer, grooved.

OXYBELIS AENEUS.

DRYINUS AENEUS *Wagler*, 1824, *Spix. Serp., Brazil*, 12, *pl. III.*

OXYBELIS AENEUS *Wagler*, 1830, *Syst. Amph.*, 183.

Very slender, slightly compressed; head distinct from the neck, long, narrow, crown convex; snout elongate and narrow, sides concave; tail very long and slender, a little shorter than the body. Eye large, pupil round. Mouth deeply cleft, outline sinuous. Crown-shields nine, anterior elongate, parietals broad. Rostral reaching the top of the snout, but not bent backward. Internasals long. Prefrontals long, bent down on the side. Frontal narrow, tapering backward. Supraciliaries long, broad posteriorly. Nasal long, narrow, entire. No loreal. One anteocular, as broad as long. Postoculars two, lower small. Labials eight, posterior very long, fourth to the sixth in the orbit. Infralabials eight, fifth and sixth larger. Temporals large 1+2. Submentals two pairs, posterior larger. Scales long, pointed, in 17 rows, outer and vertebral broader. Ventrals 183. Anal bifid. Subcaudals 197 pairs.

Light iridescent greyish or silvery punctulate with brown, sides and belly slightly darker. A narrow line of light color along the middle of the belly, more or less distinct. Irregularly sprinkled with brown spots on the back and flanks. Anteriorly the belly, throat, chin, and labials are nearly white, above this a dark brown border extends from the nostrils to the sides of the neck. Top of head bronzed and clouded. Specimens described from Obispo, Cent. Amer. Total length 41½ inches; tail 18¾. Total length 23½ inches; tail 11¼.

NATRICINAE.

Small to large, slender to stout, generally fusiform, approaching the subcylindrical in *Hydrops;* head distinct, subtriangular, muzzle narrow across the nasals; tail slender to stout, commonly tapering. Eye medium to large, pupil round. Maxillary teeth subequal in a continuous series, or posterior isolated, equal or larger, smooth or grooved. Internasals small, subtriangular or fused, sometimes displaced by the nasals. Scales keeled, except in *Hydrops.*

Scales keeled;	
nasal divided;	
teeth smooth in continuous series;	
loreal present	TROPIDONATUS.
loreal absent or present	STORERIA.
nasal grooved or divided;	
postmaxillary teeth larger and isolated	HELICOPS.
scales smooth;	
nasal grooved or divided;	
postmaxillary teeth little larger	HYDROPS.

TROPIDONOTUS.

Kuhl, 1826.

Stout to slender, tapering to head and tail, belly round; head distinct, crown flat, occipital tract broad, snout narrow; tail tapering to a point. Eye moderately large, pupil round. Teeth smooth and equal, or posterior a little larger. Head-shields normal, anterior small. Nasal in two parts, nostril between. Internasals small, narrowed anteriorly or triangular. A loreal. Preoculars 1—3. Postoculars 2—5. Suboculars present in *T. cyclopium.* Scales keeled, pointed, truncate or emarginate, in 17—33 rows, outer broader. Subcaudals in two rows.

Anal entire;	
series of rufous spots; rostral resembling that of *Salvadora;* series of scales 21	*rufipunctatus.*
striped; series of scales 19 (17—19); slender	*saurita.*
striped and spotted; series of scales 17—21	*sirtalis*
Anal bifid;	
banded transversely; series of scales 23—25	*fasciatus.*
transverse bands and spots; series 29—31	*taxispilotus.*
transverse bands to uniform; with suborbitals; series 27—33	*cyclopium.*
irregularly spotted; series 19—21	*compressicaudus.*
spots in longitudinal rows; series 19	*kirtlandii.*
striped; orbitals 2—2; series 19	*leberis.*

TROPIDONOTUS RUFIPUNCTATUS.

CHILOPOMA RUFIPUNCTATUM *Yarrow* (*Cope MS.*), 1875, *Zool. Wheeler's Survey, p.* 544, *pl. XX, fig. I.*

Moderately slender, tapering to head and tail; head distinct, elongate, narrowed anteriorly; tail about one fourth of total. Eye moderate, pupil round. Crown-shields regular. Rostral turned over the superior face of the muzzle, posterior border truncate. Internasals longer than wide. Prefrontals decurved laterally. Nasal long, narrow. Preocular higher than wide, in contact with the frontal. Two preoculars on one side. Frontal elongate, obtuse behind. Parietals elongate, bounding the upper postocular behind. Postoculars three. Temporals 1+3. Labials eight, last very small, fourth and fifth bounding the orbit below. Infralabials nine. Submentals two pairs. Scales keeled, in 21 rows, first and second smooth, poreless. Ventrals 177. Subcaudals 4+83 pairs.

Light brown above, olive shaded on the head. Anterior half of body marked with six rows of small alternating bright rufous or orange spots, each of which occupies one and sometimes an adjoining scale. They stand on the first and second, the fifth, and on the eighth rows respectively. On the posterior third of the length they are wanting, and are indistinct posterior to the middle. Lower surfaces pale brownish-grey; the base of each ventral with blackish markings. Labials light; head without spots. The figure does not agree with the description. Southern Arizona. (From descr.)

TROPIDONOTUS SAURITA, *pl. III, fig.* 2.

COLUBER SAURITA *Linné*, 1766, *Syst. Nat., ed. XII,* 385.
TROPIDONOTUS SAURITA *Schlegel*, 1837, *Ess. Phys. Serp. II,* 321.

Body slender; head distinct, crown flat; tail long, near a third of the total length, slender. Eye large, over the fourth and fifth labials. Nine head-shields. Frontal hexagonal. Rostral broader than high. Nasal in two parts, nostril between, near the upper edge. A loreal. Oculars 1—3. Temporals 1+2. Mouth-cleft deep, curved. Labials 8 (7—8), third and fourth in orbit when there are but seven. Infralabials 10 (9—11), fifth and sixth large. Submentals two pairs, elongate, narrow, hinder larger. Scales keeled, in 19 rows, outer broader. Ventrals broad, 150—160 (with var. proximus 150—180). Anal entire. Subcaudals 110—120 (100—120).

Brown to black, olivaceous beneath. With a dorsal and two lateral narrow lines of yellow. Lateral lines upon the third and fourth rows of scales; below them on the outer rows the color is brown, sometimes very much faded, and shades into the olive beneath. Skin between the scales black. Short white lines to be seen on stretching the skin. Specimens from the Mississippi Valley show black spots in the brown of the flank. A vertical spot of yellow on the anteorbital. Dark color of the head extending to the rostral and upper labials. A pair of small yellow spots near the inner margins of the occipitals. Closely allied to *T. sirtalis.* Valley of the Mississippi and eastward.

var. PROXIMUS.

Stouter. Ventrals 168—178. Subcaudals 100—108. Mississippi Valley to Mexico.

TROPIDONOTUS SIRTALIS, *pl. III, fig.* 3.

COLUBER SIRTALIS *Linné*, 1758, *Syst. Nat., ed. X*, 222; *ed. XII*, 1766, *p.* 383.

TROPIDONOTUS SIRTALIS *Holbrook*, 1842, *N. A. Herp. IV*, 41, *pl. XI.*

Young slender, old moderately stout; head distinct, broad behind, narrow in front, flat on the crown; tail medium, slender posteriorly, one fourth to one fifth of the total length. Nine head-shields. Vertical hexangular. Rostral broader than high. Nasal in two parts, nostril between—in anterior portion. Loreal quadrangular. One anteorbital. Postorbitals 3—4. Eye large, over the third and fourth or fourth and fifth labials. Mouth-cleft deep, curved. Labials 7 or 8, antepenultimate largest. Infralabials 10. Submentals two pairs, hinder larger. Scales keeled in 17—21 rows, dorsal narrow, outer broad. Ventrals broad 140—155 (140—180 with the varieties). Subcaudals 50—90 pairs.

Brown above, varying from light ashy to very dark; olive beneath. A dorsal and two lateral narrow lines of yellow, sometimes faded or obliterated. In the brown space between the yellow lines on the flank are two series of quadrate alternating spots; sometimes the upper of these forms a band (*var. collaris*), and in cases the spots of the lower are joined to it (*var. pickeringii*). A brown band on the outer row (sometimes obsolete), with or without a series of spots. Black spots on the base near the extremities of each ventral are visible on bending the body. When the skin is stretched numerous short white lines are to be seen on the flanks of most specimens. A small yellow spot near the inner margin of each parietal shield. Chin and throat lighter colored, yellowish. Labials more or less bordered with black. Kentucky specimens show a light collar extending toward the occiput around the angle of the jaw, behind which the dark color is produced toward the throat. On account of the amount of variation of this species in different localities, it is hardly to be separated from the preceding. Canada to Central America.

sirtalis. Rows 19. Spots 70—90. Ventrals 140—165+60—85 pairs. Mississippi Valley and eastward.

marcianus. Rows 21. Spots 50—75. Ventrals 145—175+50—90 pairs. Texas to Mexico.

parietalis. Rows 21. Spots 70—110. Ventrals 160—185+50—90 pairs. Valley of the Missouri and westward.

infernalis. Rows 17—19. Spots 100—120. Ventrals 145—175+75—95 pairs. California and northward.

collaris. Rows 19. Ventrals 151—165+58—84 (Jan.) Mexico to Panama.

ordinatus. Agrees with *sirtalis*, but has the lower series of spots more distinct, while the stripes are almost obsolete, and is found in various isolated localities of the same district, as Alabama, South Carolina, Martha's Vineyard, and Nova Scotia.

TROPIDONOTUS SIPEDON, *pl. II, fig.* 3.

COLUBER SIPEDON *Linné*, 1758, *Syst. Nat., ed. X*, 219.

TROPIDONOTUS SIPEDON *Holbrook*, 1842, *N. A. Herp. IV, p.* 6, *pl.* 29.

Stout, fusiform, belly broad; head distinct, narrow forward; tail smaller than the body, tapering. Eye medium, pupil round. Mouth-cleft deep, abruptly curved near the angle. Nine head-shields. Rostral low, broader than high. Nasal in two parts, nostril between. A loreal. One anteorbital, sometimes two. Postorbitals two to four. Temporals 1+2, large. Labials 8 (7—9), sixth and seventh large. Infralabials 10 (9—11), fifth and sixth large. Submentals two pairs, large, not in contact with the mental. Scales strongly keeled, in 23 to 25 rows, dorsal narrow, outer broader than long, keeled to smooth. Ventrals 130—155. Anal divided. Subcaudals 40—75 pairs.

Varying from ashy to very dark brown, or to brownish-red; with three series of dark-edged brown spots; dorsal about ten scales in width, varying in shape from irregular rounded to nearly square, distinct or confluent with the lateral into transverse bands, which widen toward the vertebral rows. There are usually twenty-five to thirty spots on the flank, wider than long, and from fifteen to twenty on the tail. Commonly the spots on the flanks are more or less opposed and confluent anteriorly, but posteriorly alternated with those of the dorsal series. A faded band of dark color from the eye to the angle of the mouth. The markings are subject to great variation, often very indistinct or obsolete. Belly reddish, yellowish, or white, more or less spotted or mottled with brown, lighter under neck and chin. Canada to Mexico.

sipedon. Greyish or brownish. Rows of scales 23 (23—25). Maine to Sonora.

erythrogaster. Reddish. Rows of scales 23—25. Southeastern U. S.

rhombifer. Brownish, with transverse dorsal rhombs. Rows of scales 25.

TROPIDONOTUS TAXISPILOTUS.

Holbrook, 1842, *N. A. Herp. IV, p.* 35, *pl. VIII.*

Stout, tapering to head and tail; head moderate, broader than the neck, snout, narrow; tail about one fourth of the total length, somewhat distinct, slightly compressed, tapering. Head-shields normal. Rostral broad, low. Nasal in two parts, nostril between. A loreal. One anteorbital (1—2.) Postorbitals 2 (2—3.) A single temporal in contact with the orbitals. Labials 8 (7—9), the two preceding the last large. Infralabials 10 (9—11), fifth and sixth larger. Scales keeled, notched at the extremity, in 29—31 rows, outer rather large. Ventrals broad, 130—141. Anal bifid. Subcaudals 80 pairs. Brown, with three series of dark blotches, separated by spaces of nearly equal width. Lateral series little smaller than the dorsal. Belly brownish, marked with yellow on the fore edges of the scales, more yellow anteriorly. Southeastern United States.

TROPIDONOTUS CYCLOPIUM, *pl. II, fig.* 4.

Duméril & Bibron, 1854, *Erp. Gén. VII*, 576.

Moderately stout, elongate fusiform; belly broad, back slightly compressed; head distinct, broad behind, short in front of eyes; tail about one fourth of the total, subtriangular, tapering. Head-shields nine. Rostral broad, low. Nasal in two parts, nostril between. Lower side of loreal longer, upper short. One ante, two post, and two to three suborbitals. Temporals large, a single one in contact with the orbitals. Labials 8—9, three preceding the last large, occasionally one or more in contact with the orbitals. Infralabials 10—12. Submentals two pairs, anterior larger. Scales notched at the end, keeled, in 27—33 rows, outer broader, faintly keeled. Ventrals 138—150. Anal bifid. Subcaudals 60—75 pairs.

Clouded olivaceous brown, with narrow, irregular, more or less indistinct vertical bands of about two scales in width, separated by narrow spaces. In places on the body these bands appear to meet on the back, in others they alternate, and posteriorly most of them are divided on the middle of the flank to form alternating series of quadrate blotches, similar to those of *sipedon*. Belly brown toward the vent, with semicircular yellow spots on the hinder edges of the scutes; anteriorly it is yellow, with spots of brown, somewhat similar in shape on the bases of the plates. There is great variation in intensity and amount of marking. A very large specimen from Florida shows only a narrow band of brown on the base of each ventral. Specimens of this species from Florida are hardly to be separated from *taxispilotus*. Ohio to Florida.

TROPIDONOTUS COMPRESSICAUDUS.

NERODIA COMPRESSICAUDA *Kennicott*, 1860, *Pr. Ac. N. Sc., Phil.*, 335.

Moderate, belly broad, back slightly compressed; head distinct, narrow; tail compressed, subtriangular, about one fourth of the total. Head shields normal. Internasals as long or longer than wide, narrow in front. Nasal divided obliquely, nostril near the upper margin. One anteorbital. Postorbitals two (2—3). A large temporal in contact with the orbitals. Labials eight (7—9), the two preceding the last large. Eye medium, pupil round. Infralabials ten (9—11). Hinder pair of submentals larger. Scales keeled, truncate or notched at the end, in 19—21 rows, outer broader, keeled to smooth. Ventrals broad 125—135. Anal bifid. Subcaudals 66—81 pairs.

Dark greyish-brown, much spotted and dotted with yellowish. Ventrals, chin-shields, and labials with central rounded or oblong spots of yellow. Flanks with faintly outlined vertical bands, appearing in parts of the body as three or four series of spots, sometimes united at the neck into as many short longitudinal bands. Head nearly black. Florida.

TROPIDONOTUS LEBERIS, *pl. II, fig.* 1.

COLUBER LEBERIS *Linné*, 1758, *Syst., ed. X, I*, 216; *ed. XII*, 1766, 375.

TROPIDONOTUS LEBERIS *Holbrook*, 1842, *N. A. Herp. IV*, 49, *pl. XIII.*

Body moderately stout and long; head very little larger than the neck, depressed, crown flat; tail near one fourth of the total, tapering to a point. Head-shields normal. Rostral broad, low. Nasal divided. Mouth deeply cleft, curved posteriorly. A loreal. Anteorbitals two (2—3.) Postorbitals two (2—3). Temporals 1+2. Labials seven (7—8). Eye over third and fourth, fifth and sixth larger. Infralabials 10 (9—11), fifth and sixth larger, posterior very small. Submentals two pairs, hinder larger. Scales keeled, truncate or notched at the end, in 19 rows (19—21 var. *validus*), dorsal narrow, outer broad, faintly keeled. Ventrals 140—150. Anal bifid. Subcaudals 64—86 pairs.

Reddish-brown, more or less olive, with a band of light color from the rostral along the upper labials the first and second rows of scales on the flank; below this on the first row and ends of the ventrals there is a narrow brown space. The light bands are usually margined with a dark line. Anteriorly the belly is yellowish, more or less mottled with olive, or bearing two lines of olive near the middle; posteriorly the ventrals are olive, with or without a narrow space of yellow in the middle. Chin, throat, and labials light yellow. With or without vertebral and lateral narrow lines of brown. In Kentucky specimens these lines are almost obsolete. Bright fresh ones just taken from the water have the appearance of being striped longitudinally, above and below, with narrow bands, the dark separated by lighter of about the same width, which do not form very marked contrasts, if we except the light stripe on the flank. South Carolina to California and Mexico.

rigidus. Dorsal vittae distinct; colors dark. Southeastern United States.

grahamii. Vittae distinct; bands of yellow on the flank; a light band on the middle of the back; belly yellow. Texas.

validus. Vittae obsolete; light brownish ash above; belly uniform yellowish. California to Mexico.

TROPIDONOTUS KIRTLANDII, *pl. I, fig.* 3.

REGINA KIRTLANDII *Kennicott*, 1856, *Pr. Ac. N. Sc., Phil.*, 95.

Small. Moderately stout, tapering little to head and tail, belly broad, back slightly compressed; head small, sub-oval, little larger than the neck, depressed, crown convex, snout short, rounded; tail short, about one fifth of the total, tapering regularly to the tip. Eye medium, pupil round. Mouth-cleft deep, curved. Head-shields nine. Parietals and frontal large. Prefrontals broad, reaching down the side of the face. Rostral broad, low. Nasal divided. A loreal. One anteorbital. Postorbitals two. Temporals 1+2. Labials 6, eye over third and fourth, fifth and sixth larger. Infralabials 7 (7—8), fifth and sixth larger. Submentals two pairs, subequal. Scales keeled, in 19 rows, dorsal narrow, truncate, outer and caudal broad, rounded at the end. Ventrals 129—133. Anal bifid. Subcaudals 50—59 pairs.

Light greyish-brown, scales punctulate with black, with three alternating series of rounded black spots on each side. The median series of spots are the largest, four or five scales in width, about fifty from head to vent, and twenty-five on the tail. The spots of the upper series are much smaller and less distinct than those of the median; and those of the lower are still smaller and more faint. Belly yellowish, with a series of black spots near each edge. These spots are on the bases of the ventrals, a short distance from the extremity. Head to upper edge of labials dark brown, with small yellow spots on the occiput; yellow beneath. Illinois.

STORERIA.

Baird & Girard, 1853.

Small species. Moderately elongate, rounded; head short, narrow, very little larger than the neck, crown flat; tail tapering. Head-shields normal, anterior short. Loreal absent or present. Nasal in two parts, nostril between, or grooved below the nostril. Teeth equal, smooth. Scales keeled, in 15—17 rows. Anal divided or entire. Subcaudals in two rows. Hardly to be ranked higher than as a subgenus of *Tropidonotus*. Canada to Mexico.

Anal bifid;
  a loreal; orbitals 2—3;
    scales in 15 rows *storerioides.*
  No loreal; orbitals 2—2;
    scales in 15 rows *occipitomaculata.*
      orbitals 1—2;
    scales in 17 rows *dekayi.*
Anal entire;
  No loreal; scales in 15 rows; orbitals 1—2.
    copei.
  A loreal; scales in 17 rows;
      nasal grooved *lineata.*

STORERIA STORERIOIDES.

TROPIDOCLONIUM STORERIOIDES *Cope*, 1865, *Pr. Ac. N. Sc., Phil.*, 190.

Small, not slender, muzzle obtuse, in general similar to *S. dekayi*. Nasal divided or grooved. Head-shields nine. Loreal trapezoidal touching the decurved prefrontals at the superior angle, sometimes entering the orbit between the two anteorbitals. One temporal in contact with the three postorbitals. Labials 7 (6—7), third and fourth in orbit. Infralabials 7, fourth largest. Submentals two pairs. Scales keeled, in 15 rows, vertebral narrow, outer broad, smooth. Ventrals 126±. Anal divided. Subcaudals 40 pairs.

Light to olive brown, punctulate above and below, with about fifty-four light-edged black cross-bars extending over six rows of scales, alternating with shorter ones on the sides, broken into spots on the neck. A large blotch behind the occiput on each side. Total length 13 in. 5 l.; tail 2 in. 8 l. (From descr.) Mexican Plateau, between Valley of Mexico and the Eastern Range.

STORERIA OCCIPITOMACULATA, *pl. I, fig.* 2.

TROPIDONOTUS OCCIPITOMACULATUS *Storer*, 1839, *Rep. Mass. Rept.*, 230.

STORERIA OCCIPITOMACULATUS *Baird & Girard*, 1853, *Cat. N. A. Serp.*, 137.

Small, not stout, elongate, subcylindrical, belly round; head distinct, depressed, crown slightly convex, narrow in front; tail about one fourth of the total, tapering regularly to a slender extremity. Eyes medium, pupil round. Mouth-cleft deep, slightly curved. Head-shields nine, short, broad. Rostral broader than high. Nasal divided, nostril in anterior portion. Loreal absent, rarely present (a specimen from Michigan has one on each side). Two anteorbitals. Postorbitals two. Temporals 1+2. Labials 6 (5—6), low, eye over the third and fourth, penultimate larger. Infralabials 7 (6—7), fifth largest. Submentals two pairs, posterior half as large as anterior. Scales keeled, notched at the end, in 15 rows, dorsal narrow, outer much broader. Ventrals 117—128. Anal bifid. Subcaudals 43—50.

Brownish or greyish olive. A narrow band of light color on the middle of the back, three scales in width, inclosed by a pair of narrow black lines; on the inferior row there is a similar line or vitta. Closely examined, the scales are punctulate or mottled with black. The middle of the belly is yellowish white, red in life, and becomes more olive toward the flanks. Behind each angle of the mouth, and on the occiput, there is a spot of light color. Under the head and neck the scales are more or less punctulate or clouded with brown. The markings vary from very distinct to obsolete. Mississippi Valley and Eastward.

STORERIA DEKAYI *pl. I, fig.* 1.

TROPIDONOTUS DEKAYI *Holbrook*, 1842, *N. A. Herp. IV*, 53, *pl. XIV.*
STORERIA DEKAYI *Baird & Girard*, 1853, *Cat. Serp.*, 135.

Small. Body elongate fusiform, belly broad, rounded; head distinct, depressed, rounded behind, narrow and angular in front; tail short, about one fifth of the total, tapering gradually, slender near the extremity. Eye moderate, pupil round. Snout prominent. Rostral broader than high. Head-shields normal. Frontal short, broad. Nostril in hinder edge of anterior portion of the nasal. No loreal. One anteorbital. Postorbitals two, sometimes fused. One temporal in contact with the orbitals. Labials 7, eye over the third and fourth. Infralabials 7, fourth and fifth large. Submentals two pairs, subequal. An elongate shield behind the fifth and sixth infralabials. Scales keeled, slightly notched at the end, in 17 rows, dorsal narrow, outer very broad. Ventrals 120—138. Anal bifid. Subcaudals 40—60.

Light brownish olive, ashy to reddish, with two series of small black spots, about four scales apart, along the middle of the back. The spots are irregularly placed, and often united across the intervening space, forming short transverse bands of about seven scales in width. The spaces between these spots is lighter than the flanks, and separated from them by a dark line connecting the outer edges of the blotches. In the first pair the spots are larger, and extend from the occiput down the back of the head around the angles of the jaws. Head darker, a dark band across the occipitals to the hinder labial, sometimes broken on the sides. A vertical band of black under the eye. Often there is a second series of indistinct spots on the flank below the dorsal vitta, alternating with the vertebral series. Belly uniform, or with irregularly placed dots of black near the sides. Chin and throat more yellow. Spots sometimes obsolete. Maine to Mexico.

A specimen from Jalapa, Mexico, has 145 ventrals, a bifid anal, and 44 pairs of subcaudals. It is only by a close examination that it can be distinguished from Massachusetts specimens.

STORERIA COPEI.

ADELOPHIS COPEI *Cope*, 1879, *Pr. Am. Phil. Soc.*, *p.* 265 (*Duges MSS.*)

Head little larger than neck; tail pointed, near one fifth of the total. Rostral not produced, projecting very slightly above the level of the muzzle. Internasals small, triangular. Frontal longer than wide, hexangular. Prefrontals in contact with labials. Supraoculars elongate, straight. Occipitals large. Nostril in posterior border of anterior portion of nasal. No loreal. One anteorbital. Postorbitals two. Temporals 1+2. Labials 5, third and fourth in contact with orbitals and eye. Infralabials 5 (6). Submentals two pairs. Scales keeled, truncated, in 15 rows, outer larger and smooth. Anal entire.

Light brown. A yellow band two scales in width along the vertebral rows, bordered on each side by a reddish-brown band of equal width, below which passes a narrow black line, ending in a black spot behind the eye. Posterior margins of outer row marked with black. Top of head reddish-brown. Lips and flanks yellow. Guadalaxara, Mexico. (From descr.)

STORERIA LINEATA, *pl. I, fig.* 4.

MICROPS LINEATUS *Hallowell*, 1856, *Proc. Ac. N. Sc., Phil., p.* 241.

Small. Stout, subcylindrical, belly broad, rounded; head indistinct, small, slightly convex on the crown; tail short, thick. Eye small, over third and fourth labials, pupil round. Mouth-cleft deep, curving near the angle. Snout narrow, rounded. Head-shields nine. Prefrontals reaching down on the side of the face. Rostral small, low, a little broader than high. Nasal grooved below the nostril. Loreal elongate, low. Orbitals 1+2. Temporals 1+1+2. Labials seven, sixth wedged between the fifth and seventh, not reaching the lip. Infralabials six, fourth largest. Submentals two pairs, posterior half as large as the anterior. Scales keeled, in 17 rows, median narrow, notched, outer two broad, smooth, or faintly keeled. Ventrals 138—145. Anal entire. Subcaudals 32—35 pairs.

Light greyish-brown. A light line from the occiput to the end of the tail on the medial three rows of scales. The base of each scale in the row next to this is black, forming two lines of dots. A white line occupies half of each of the second and third outer rows. Bases of the scales black in the first, second, fourth, and sometimes fifth rows. Under the epiderm the appearance is much darker. Belly yellowish white; on each side of the middle a series of black spots on the bases of the ventrals, more or less confluent across the belly, and meeting on the neck. Head mottled with black. Kansas to Texas.

HELICOPS.

Wagler, 1830.

Form stout, tapering to head and tail; head larger than the neck, broad behind, narrow forward, crown flat; tail tapering. Eyes moderate to small, pupil round. Teeth smooth, post maxillary larger and often isolated. Head-shields eight or nine. Internasals narrow in front or fused, generally in contact with the rostral. Nasal entire and grooved, or divided. With or without a loreal. Commonly 1—2 ante, and 2—3 postorbitals, suborbitals rarely present. Scales keeled in 19—25 rows. Anal bifid. Subcaudals in two rows.

Nasal divided;
internasals 2; scales keeled, in 19—21 rows *variabilis.*
Nasal entire, grooved;
internasal 1; scales in 19 rows, keels few *allenii.*

HELICOPS VARIABILIS.

TRETANORHINUS VARIABILIS *Dum. & Bibr.*, 1854, *Erp. Gén. VII*, 349.

Fusiform; head distinct, narrow across the nasals, broad behind, depressed, crown flat; tail moderate, tapering rapidly near the base. Eye small, pupil round. Jaws nearly equal in length. Posterior maxillary teeth little larger, slightly compressed. Rostral broader than high, convex. Head-shields nine. Internasals small, irregular, subtriangular, not at all or but little in contact with the rostral. Prefrontals broader in front, longer than broad. Frontal pentagonal, truncate and narrower in front. Nasal in two parts, the small nostril between, nearer the upper margin. Loreals 2 (1—2), anterior smaller. Anteorbitals 2 (2—3), lower larger. Postorbitals 2. Temporals 1+2+3. Labials 8—9, the two preceding the last largest, a single one (fourth or fifth) under the eye. Infralabials 10—11, sixth largest (fifth or sixth). Submentals two pairs, posterior larger. Scales keeled, lozenge-shaped, truncate, in 21 rows (19—21), dorsal finely striate, outer broader, nearly or quite smooth. Ventrals broad 142 (137—158). Anal bifid. Subcaudals 65 pairs (65—78).

Light greyish to dark brown, edges of scales lighter; young with irregular indistinct blotches of darker. A light line on the outer two rows of scales from the neck to the tip of the tail. Belly yellowish white, mottled with brown, darker on throat and chin. A dark border to the lower edge of the light line on the flank is not always present. A dark band passes from the nasals through the eye to the neck. One of the specimens from which this description is taken has been named by Prof. Jan *Helicops Agassizii.* Hab. Mexico and Central America.

HELICOPS ALLENII, *pl. VII, fig.* 4.

Garman, 1874, *Proc. Bost. Soc. Nat. Hist., XVII,* 92.

Fusiform, stout, slightly compressed, belly rounded; head small, crown slightly convex and tapering to a point at the rostral; tail moderate, tapering rapidly near the base. Eye large, pupil round, situated in advance of the middle of the length of the mouth. Mouth-cleft deep, slightly curved. Posterior maxillary teeth larger. Head-shields eight. Internasals fused, very small. Frontal slightly narrower forward. Occipitals broad, in contact with the labials. Supraciliaries elongate, narrow in front. Prefrontals broad, reaching down on the side of the face. Rostral small, broader than high. Nasals entire, in contact between rostral and prefrontals. Nostril small, superior, a groove from its lower edge to the labial. Loreal quadrangular. One anteorbital. Postorbitals three, lower small. Temporals 1+2 (not in contact with the orbitals). Labials 8, sixth and seventh large, hinder angle of third and the fourth entering the orbit. Infralabials 10 (10—11), fifth and sixth larger. Submentals two pairs, hinder larger. Scales smooth, excepting several rows on the tail, lustrous, in 19 rows, vertebral twice as long as wide, outer wider than long, the medial two rows of the tail strongly and the next pair slightly keeled. Ventrals 128. Anal bifid. Subcaudals 58 pairs.

Dorsal rows light reddish-brown (yellowish to flesh color on the flanks). A vertebral band of rich dark brown near five scales in width, the middle of which is perceptibly lighter. A band of lighter brown on each flank, two scales and two half scales, separated from the vertebral by a band of the ground color two half scales wide. Lateral edges of each scale darker. Labials, chin and throat yellowish. Head of a uniform rich dark brown. Florida.

HYDROPS.

Wagler, 1830.

Elongate fusiform to subcylindrical; head rather indistinct, short, broad, rounded; tail short, thick, pointed. Eye moderate, pupil round. Teeth smooth, in continuous series, or posterior maxillary larger, sometimes isolated, rarely grooved. Head-shields 8—9. Internasals 2 or fused. Nasal grooved or divided. Loreal rarely present. Orbitals 1—2. Scales smooth, lustrous, in 15—21 rows. Anal bifid. Subcaudals in two rows.

Nasal grooved;
no loreal;
scales in 19 rows;
head-shields normal *erythrogrammus.*
internasals fused *abacurus.*
Nasal divided;
a loreal;
scales in 21 rows;
head-shields normal *quinquevittatus.*

HYDROPS ERYTHROGRAMMUS.

COLUBER ERYTHROGRAMMUS *Daudin*, 1799, *Hist. Rept. VII*, 93, *Tab.* 83, *f.* 2.

Stout, round, subfusiform; head hardly distinct from neck, slightly depressed, rounded; tail short, one sixth to one eighth of the total, thick, tapering to a point. Snout moderate, rounded. Eye medium, over the third and fourth labials, pupil round. Mouth deeply cleft, outline nearly straight. Teeth larger backward. Head-shields normal. Rostral broad, convex. Internasals small. Prefrontals broad, entering the orbit. Frontal hexagonal, lateral sides nearly parallel. Anteorbital and loreal united. Postorbitals two. Temporals 1+2. Labials 7, penultimate largest. Infralabials eight, fifth larger. Submentals two pairs, posterior smaller. Scales smooth, glossy, in 19 rows, dorsal broad, outer broader than long. Ventrals broad 167—185. Anal bifid, exceptionally entire. Subcaudals 38 to 50 pairs.

Red or reddish brown, with four bands of lustrous dark-brown or black from head to tail, each about three scales in width, separated by red spaces of about one scale on the vertebral and the sixth rows on each flank. Outer row, sometimes the first two or three rows, red. Lateral brown band often narrowed, lower margin notched. A rounded spot of black near each end of the ventrals. A row of spots along the middle of the belly, sometimes broken or absent. Labials and chin-shields with central spots of black. Head-shields more or less marked with red. Largest specimen 39½ inches in total; tail 5½ inches. Mississippi Valley and eastward, as far north as Illinois and North Carolina.

HYDROPS ABACURUS, *pl. I, fig.* 5.

COLUBER ABACURUS *Holbrook*, 1836, *N. A. Herp.* 1st *ed.*, *I*, 119, *pl. XXIII.*

HYDROPS ABACURUS *Dum. & Bibr.*, 1854, *Erp. Gén.*, *Tab.* 65.

Long, moderately stout, cylindrical; head very little larger than the neck, depressed, rounded; tail short, thick, conical, one sixth to one ninth of the total. Snout short, broad. Eye medium, over third and fourth labials, pupil round. Mouth-cleft deep, slightly curved. Teeth little larger backward. Head-shields eight. Internasals united. Prefrontals reaching the orbit. Frontal hexangular. Nasal entire, grooved from the nostril to the first labial. Nostril small, visible from above. Loreal united with anteorbital. One anteorbital. Postorbitals two, lower small, in a notch between the labials. Temporals 1+2. Labials seven, sometimes fused or divided, penultimate larger. Infralabials nine, fifth larger. Submentals two pairs, hinder small. Scales smooth, glossy, rounded at the end, in 19 rows, outer broader. Ventrals large, broad, 171—203. Anal bifid. Subcaudals in 35—47 pairs.

Ground color red, yellow in alcohol. Back and usually top of head bluish-black. The black color extends down the flanks in wedge-shaped points, separated by wedges of the red, which sometimes extend to the middle of the back. The bands of black extend nearly or quite to the middle of the belly, where they meet or alternate with those from the opposite side. Red occasionally encircling the neck or scattered over the top of the head. Anterior labials and chin-shields, with rounded spots of black. Largest specimen 54 inches long; tail 5⅝ inches. Mississippi Valley and eastward, as far north as Illinois and Virginia.

HYDROPS QUINQUEVITTATUS.

HOMALOPSIS QUINQUEVITTATUS *Dum. & Bibr.*, 1854, *Erp. Gén. VII*, 975.

Elongate, moderately stout, subcylindrical; head distinct, little larger than the neck, depressed, crown flat, muzzle narrow between the nostrils; tail stout, tapering regularly to the point. Eye moderate, pupil round. Mouth-cleft deep, outline curved. Posterior maxillary teeth longer, separated by an interspace. Head-shields normal. Internasals small, narrow in front. Frontal short, broad, truncate, or angled in front. Nasal divided or entire. Loreal half as large as the anteorbital. Postorbitals two. Temporals 1+2. Submentals two pairs, nearly equal, posterior diverging.

Labials 8, sixth and seventh largest. Infralabials 10. Scales smooth, lustrous, in 21 rows. Ventrals 160. Anal bifid. Subcaudals 65 pairs.

A band of black along each flank from the nostril to the tip of the tail. One or two of the outer rows lighter. Dorsal region covered by a band of greyish brown, lighter near the black bands. Labials, infralabials, and chin-shields with rounded spots of black. Each ventral has a rounded spot upon the base near each end which form a series along each side of the abdomen. Southern Mexico and Central America.

COLUBRINAE.

Elongate fusiform, stout to slender; head distinct from the neck, elongate, crown flattened, sides concave; neck somewhat small; tail rather long, not distinct from the trunk, tapering. Muzzle stout, produced. Mouth deeply cleft, outline curved. Teeth subequal or posterior larger. Eye large, pupil round. Scales smooth or keeled, imbricate; subcaudals in two rows.

The typical genera of the family are those of Coluber and Elaphis, the genera to which the common black snakes of the United States belong.

Nasal divided;
edges of rostral free; scales smooth, in 17 series;
posterior maxillary teeth longer, isolated, smooth
SALVADORA.
Nasal entire;
teeth equal, smooth; loreal present or lacking;
anal bifid; scales smooth or keeled, in 15 or 17 series
CYCLOPHIS.
Nasal divided;
anal bifid; scales smooth or keeled; loreal present;
teeth becoming longer posteriorly COLUBER.
anal entire;
teeth equal smooth; a loreal; crown-shields nine;
scales keeled or smooth, in 15 to 23 series
SPILOTES.
scales keeled, in 27 to 35 series;
crown-shields nine to eleven PITYOPHIS.

anal bifid or entire;
teeth equal, smooth; a loreal; crown-shields nine;
scales keeled, sometimes obsoletely, in 19 to 25 series
ELAPHIS.
anal bifid;
posterior maxillary teeth longer, smooth; loreal rarely absent;
crown-shields nine DROMICUS.

SALVADORA.

Baird & Girard, 1853.

Elongate, slender; head distinct from neck, long, snout produced; tail slender, tapering gradually. Eye large, pupil round. Posterior maxillary teeth larger, smooth, isolated. Head-shields nine. Rostral prominent, bent back on the head, edges more or less free. A loreal. Nasal divided. Anteorbitals two to three. Postorbitals two to three. Scales smooth, generally in 17 rows. Anal bifid. Subcaudals in two rows.

Labials forming the lower edge of the orbit;
with longitudinal bands *grahamii.*
Orbit separated from the labials by small shields;
with a dorsal series of blotches *decurtata.*

SALVADORA GRAHAMIAE.

Baird & Girard, 1853, *Cat. N. Amer. Serp.,* 104.

Slender, fusiform; head moderate, distinct from the neck, with flat crown; tail about one fourth of the total, slender. Eye large, pupil round. Snout produced, truncate, inclined from a vertical. Rostral prominent, with free edges, bent back on the top of the snout. Crown-shields nine. Internasals broad, separated in front by the rostral. Prefrontals broad. Supraciliaries and frontal long. Nasal divided, nostril lateral near the margin of the prefrontal. Loreals one to three. Anteorbitals two. Postorbitals three to two. Labials nine, eye over the fifth and sixth, seventh largest. Temporals two, followed by irregular shields. Infralabials nine to ten, fifth largest. Posterior submentals small. Scales smooth, in 17 rows, medial narrow, outer broad. Ventrals 175—186. Anal bifid. Subcaudals 75 to 106 pairs.

Top of the head yellowish brown, from this to the end of the tail extends a medial band of dull yellowish one to three scales in width. On each side from the nasal through the eye along the flank there is a black band three or more scales in width. Below the black a band of yellowish green a scale or more in width separates it from a second dark band about half a scale in width; one or the other of these is often obsolete. Outer rows dull yellowish green. Belly uniform dull yellowish. Mexico.

var. HEXALEPIS.

PHYMOTHYRA HEXALEPIS *Cope*, 1866, *Proc. Ac. N. Sc., Phil.*, 304.

Is shorter, and has the loreal divided.

SALVADORA DECURTATA.

PHYMOTHYRA DECURTATA *Cope*, 1860, *Proc. Ac. N. Sc., Phil.*, 310.

"This species is distinguished by many features. The head is shortened and somewhat arched, the rostral plate very broad and free, entirely separating the internasals. There is a complete annulus of scales around the eye. The tail is relatively shorter than in the known species.

"Ground color light grey; a series of elongate parallelogramic brown blotches occupies the dorsal region, from the nape to the end of the tail. Labials and under surfaces unspotted. Length about 14 inches. This serpent is remarkably different from the three already known representatives of the genus. In these the orbit rests on the labials, and the color is in bands." Upper part of Lower California.

CYCLOPHIS.

Günther, 1858.

Body slender, belly rounded; head ovoid, distinct from the neck; tail long, tapering regularly. Eye somewhat large, pupil round. Teeth equal, smooth. Head-shields nine. Loreal present or lacking. Nasal entire. Orbitals 1—2. Scales smooth in 15 rows, or keeled in 17. Anal and subcaudals bifid.

CYCLOPHIS VERNALIS, *pl. III, fig.* 4.

COLUBER VERNALIS (De K.) *Harlan*, 1826, *Jour. Ac. N. Sc., Phil.*, *V*, 361.

CYCLOPHIS VERNALIS *Günther*, 1858, *Cat. Col. Snakes*, 119.

Moderately slender, subcylindrical, with flat belly. Head moderate, distinct from the neck, sides concave in front of the eye. Tail rather stout, near one third of the total, tapering. Eye medium, over the third and fourth labials, pupil round. Head-shields nine. Supraciliaries prominent. Frontal pentagonal. Muzzle prominent, extending beyond the lower jaw. Rostral bent back and sharp-angled between the internasals. Nasal entire, nostril near the center. Loreal present. Orbitals 1—2, lower small. Temporals 1+2. Labials seven, sixth larger. Infralabials eight, fifth larger. Posterior submentals shorter. Scales smooth, in 15 rows, medial narrow, outer broad. Ventrals 125—140. Anal bifid. Subcaudals 69—95 pairs.

Grass green, whiter below.

(*Phyllophilophis.*)

CYCLOPHIS AESTIVUS, *pl. III, fig.* 1.

COLUBER AESTIVUS *Linné*, 1766, *Syst. Nat., ed. XII, vol. I,* 387.

CYCLOPHIS AESTIVUS *Günther*, 1858, *Cat. Col. Snakes,* 119.

Body long, slender, compressed, with small neck and flat belly. Head distinct from the neck, elongate, with flat crown and pointed snout. Tail slender, more than half as long as the body. Eye large, pupil round. Mouth deeply cleft. Head-shields normal. Vertical pentagonal. Snout prominent; rostral broad, reaching the top. Nasal entire, elongate, nostril in the middle. Loreal present. Orbitals 1—2, lower smaller. Temporals 1+2. Labials seven, third and fourth in the orbit. Infralabials eight, fifth very large. Posterior submentals longer. Scales narrow, in 17 rows, keeled except on the outer or outer two, which are broader and smooth. Ventrals 150—165. Anal bifid. Subcaudals 110—135 pairs.

Green, blue in alcohol, often with a reddish tint; belly white, greenish posteriorly.

COLUBER.

Linné, 1754, *Mus. Ad. Fridr.; Syst. Nat., ed. X,* 1758, *I,* 216.

Elongate, moderate to slender, slightly compressed; head distinct from the neck, somewhat narrow, crown flat, subquadrangular in transverse section at the eye; tail moderate to long and slender. Eye moderate, pupil round. Teeth becoming larger and longer posteriorly. Crown-shields nine. Nasal divided. Loreal present, sometimes divided. Preoculars one to two. Postoculars two to three. Scales rhomboid, smooth or keeled, in 14 to 23 rows. Anal bifid. Subcaudals in two rows.

(*Bascanium.*)

- Scales in 17 rows;
  - anal entire;
    - back plumbeous to black, in adults;
      - two labials in the orbit *constrictor.*
      - one labial in the orbit *mentovarius.*

(*Masticophis.*)

- Anal bifid;
  - dingy white, mixed with brown, varying to black on the anterior half of the body *flagelliformis.*
  - reddish-brown; anterior scales darker in the center, posterior with a light spot at the base *testaceus.*
  - color in longitudinal bands;
    - three preoculars; brown darkening anteriorly *aurigulus.*
    - one preocular;
      - bands broken into transverse blotches anteriorly *mexicanus.*
    - a yellow band on vertebral rows; a black line at ends of ventrals *spinalis.*
- Scales in 15 rows;
  - a broad band of dark color on the back; flanks with narrow lines of light color, separated by dark. *taeniatus.*

Coluber constrictor, *pl. IV, fig.* 3.

Linné, 1758, *Syst. Nat., ed. X, I,* 216; 1766, *ed. XII, I,* 385.

Elongate, slender, slightly compressed; head distinct from the neck, long, narrow, angled in front, concave on the sides, crown flat, curving downward near the snout; tail about one fourth of the total, slender. Eyes large, over the third and fourth labials, pupil round. Mouth-cleft deep, curved. Crown-shields normal. Prefrontals bent downward on the side of the head. Rostral broad, very convex. Nasal in two parts, nostril between. A loreal. Preoculars two, sometimes but one, lower very small, in a notch between the second and third labials. Postoculars two (2—3), lower resting on the fourth labial. Temporals 2+2+2. Labials seven (7—8), fourth, sixth, and seventh larger. Infralabials nine, fifth very large, posterior two small. Submentals two pairs. Scales smooth, in 17 rows, medial narrow, outer and caudal as broad as long. Ventrals 175—190. Anal entire. Subcaudals 80—110 pairs.

Uniform lustrous black above, varying to olive or leaden, more or less yellow, on the western prairies; chin, throat, and portions of the labials white. The white extends upward behind the jaws, or is limited to the chin.

The young are olivaceous with a dorsal series of large, darker-edged, irregular-shaped brown spots, the largest of which forms a transverse band immediately behind the head. Sides and abdomen with irregularly placed spots of brown, varying in size from that of a dot to that of a couple of scales. The spots become obsolete backward. Head yellowish brown above, spotted or mottled with dark, below yellowish. Mississippi Valley and eastward.

var. FLAVIVENTRIS.

Say, 1823, *Long's Exp. II*, 185.

The "Blue Racer" of the prairies is rather stouter than the "Black Snake" of the Eastern States. On the back it is light olive, greenish or blueish; beneath yellowish, some of the scales and interspaces showing darker. The young are mottled like those of the black snake and without spots below.

var. MENTOVARIUS.

CORYPHODON MENTOVARIUS *Duméril & Bibron*, 1854, *Erp. Gén. VII*, 187.

Back greenish-brown. A single labial entering the orbit. This species resembles greatly *C. constrictor;* it is distinguished by the single labial beneath the eye. The head is comparatively more elongate, and the eye larger. The hinder submentals are longer than the anterior, which is not the case in *C. constrictor*. (Duméril.) Mexico.

COLUBER FLAGELLIFORMIS.

Holbrook, 1836, *N. A. Herp., ed. I*, 107, *pl. XIX.*

Long, slender, with flat belly; head distinct, elongate, narrow, subquadrangular in transverse section, as deep as wide at the eyes, crown flat, bent downward slightly in front of the orbits; tail long, near one fourth of total, slender, tapering regularly to the tip. Eyes large, over the fourth and fifth labials, pupil round. Snout prominent, produced, rounded. Mouth-cleft deep, curving. Teeth equal, smooth. Sides of the head concave in front of the eyes. Crown-shields nine, large, elongate. Rostral convex, little bent back between the internasals. Prefrontals large, slightly decurved upon the side. Frontal long, broad in front, becoming narrow at the middle, sides parallel posteriorly. Supraciliaries large, convex, prominent over the eye. Parietals broad. Nasal in two parts, nostril between. Loreal higher than long. Two preoculars; upper large, projecting over the loreal, upper angle in contact with the frontal; lower small in a notch between the third and fourth labials. Postoculars two, lower resting on the fifth labial. Two or three temporals in contact with the orbitals. Labials eight, posterior two largest. Infralabials ten, fifth largest. Submentals two pairs, subequal. Scales smooth, in 17 rows, outer broader. Ventrals 200—206 (with varieties 190—206). Anal bifid. Subcaudals 94 to 111 pairs. Frequently there is a short incision in the upper preocular near the upper edge of the loreal, sometimes this is met by another, cutting out a triangular piece of the shield.

Young whitish, uniform posteriorly, with narrow transverse bands of brownish anteriorly. The bands darken toward the head, which is banded and clouded with brown, darkest on the supraciliaries.

Adult dark anteriorly—brown to black, mixed white and brown medially, and whitish posteriorly. Belly dark anteriorly, clouded with brown, tinged with red in the middle and white posteriorly. Upper anteorbital with a yellow spot next the eye. The species varies considerably in the depth of the color of the anterior half of the body and in the amount of yellow about the chin. Mississippi river and eastward.

var. TESTACEUS.

COLUBER TESTACEUS. *Say*, 1823, *Long's Exp. II*, 48.

Elongate, tapering to head and tail; head a little larger than the neck, long, quadrangular in transverse section at the eyes, with concave sides, arched from the snout backward; tail near one fourth of the total, tapering, slender. Eye large, pupil round, brows overhanging. A couple of the posterior maxillary teeth a little longer. Crown-shields normal. Prefrontals broad anteriorly, bent downward at the sides. Frontal broad in front, narrow in the posterior half. Supraciliaries broadening backward. Nasal divided. Loreal small, lozenge-shaped. Preoculars two; lower small, in a notch between the third and fourth labials; upper large, reaching the frontal. Postoculars two. (In this specimen there is a large temporal between the truncate parietals and the posterior labials, and in front of it there are three small ones, two of which are in contact with the orbitals.) Labials eight, fourth and fifth entering the orbit, last two larger. Infralabials ten, fifth large. Submentals two pairs, subequal. Scales moderate, smooth, in 17 rows, outer broader. Ventrals broad, 191—198. Anal bifid, occasionally entire. Subcaudals 80—108 pairs.

Reddish-brown, more red below, lateral edges of scales lighter, each scale with a brown line through its middle, darkening toward the tip. On the hinder portion of the body each scale has a light spot at its base, and the margin is brown. Head brown, more or less yellow or mottled with yellow. Labials, chin, and throat yellow, more or less blotched with brown. Usually there are two rows of brown spots on the shields of the throat, sometimes extending under the body. In a specimen stripped of the epiderm there are indistinct narrow transverse lines of darker on the back. Total length 47 inches; tail 12½ inches. Arkansas to Mexico.

var. AURIGULUS.

DRYMOBIUS AURIGULUS *Cope*, 1861, *Pr. Ac. N. Sc., Phil.*, 301.

Crown flat, muzzle elongate. Eye moderate. Rostral plate rounded, prominent, recurved above. Frontal elongate, posteriorly half as wide as each supraciliary, not in contact with the preocular. Parietals elongate. Nasals and loreal very long, the latter encroaching much on the preocular. Three pre, two postoculars. Labials eight, fourth and fifth entering the orbit; the last equal in length and elevation to the penultimate. Infralabials ten, fifth largest. Anterior submentals shorter. Scales in 17 rows.

Brown, darkening anteriorly. Head-plates light brown, shaded with yellow. A narrow yellow band around the muzzle from eye to eye. Temporal region and postoculars each with a spot. Labials, chin, and anterior portion of abdomen bright golden, as also the sides of the neck to the fifth row of scales. On the second and third rows of scales of the neck there is a black band, interrupted at intervals of about seven scales. It finally becomes continuous, and with a band on the first row almost excludes the ground color from the posterior and middle parts of the body. Abdomen dirty yellowish. Cape St. Lucas, Lower Cal.

COLUBER MEXICANUS.

ZAMENIS MEXICANUS *D. & B.*, 1854, *Erp. Gén.*, 695.

Long, slender, belly broad; head distinct from neck, elongate, depressed, crown flat, sides concave at the eye; tail near one third of the total, slender, tapering regularly. Mouth-cleft deep, sinuous. Eye moderately large, pupil round. Crown-shields normal. Rostral prominent, higher than wide, bent back between the internasals in an acute angle. Prefrontals broader than long. Frontal long, sides concave. Supraciliaries large, prominent. Nasal divided. Loreal present. Preoculars large, considerably in contact with the anterior angles of the frontal. Two postoculars, lower resting on the sixth labial. Temporals 2+2+2. Labials nine, fourth, fifth, and sixth in the orbit, hinder four larger. Infralabials ten, sixth largest. Submentals two pairs, nearly equal. Scales smooth, in 17 rows, dorsal narrow, lateral as broad as long. Ventrals 182. Anal bifid. Subcaudals 128 pairs.

Light brownish or yellowish-brown. Posteriorly with four black bands on the dorsal rows, each of the width of two scales, separated on the flank by a space of equal width and by the median row of scales on the back. Forward the bands are broken up and each scale of the dorsal rows is more or less marked with black. The first band occupies a portion of the outer row and all of the second. Anteriorly the back is crossed by transverse bands of brown, the first of which crosses the head just behind the parietals and meets the bands from the eye. Crown-shields broadly margined with brown. Parietals divided longitudinally by a band, a dot of brown on the yellow portion of each near the middle. Total length 31½ inches; tail 10¾ inches. San Blas, Jalisco, Mexico.

COLUBER SPINALIS.

MASTICOPHIS SPINALIS *Peters*, 1866, *Monatsber. Berl. Akad.*, 91.

Very long and slender; head twice as long as broad, snout prominent, rounded; tail near one fourth of the total. Posterior maxillary tooth longer, smooth. Crown-shields nine. Prefrontals broader than long, not longer than the internasals. Nasal in two parts, nostril between, above the middle. Loreal trapezoidal, longer than broad. Two preoculars; upper large; lower small, in a notch between the third and fourth labials. Frontal long, broad and blunt-angled in front, concave at the sides. Parietals hardly longer than the frontal. Supraciliaries narrow in front, broader than the frontal posteriorly. Temporals 1+2. Labials eight, fourth and fifth in the orbit. Infralabials ten, fifth largest. Submentals two pairs, elongate. Scales smooth, in 17 rows, dorsal with two pores, narrow, outer twice as broad. Ventrals 203. Anal bifid. Subcaudals 96 pairs.

Olive-tinted greenish-brown above; a yellow black-edged band one and two half scales in width along the middle of the back. A blackish line on the ends of the ventrals and edge of the outer row. Above the dark edges a light space on the outer row extends along body and tail as a light line. A yellow cross band on the hinder extremity of the prefrontals, the ante and postoculars. The greater part of the supralabials and ventral surface yellow. Mexico.

COLUBER TAENIATUS.

LEPTOPHIS TAENIATA *Hallowell*, 1852, *Proc. Ac. N. Sc., Phil.*, 181.

Very long and slender; head distinct from the neck, elongate, narrow, subquadrangular in transverse section, crown flattened, sides concave in front of the eye; tail slender, long, one third of the total. Snout prominent. Mouth-cleft deep, outline curved. Teeth equal, smooth. Eye large, pupil round. Crown-shields nine, large, long. Rostral bent back in a blunt angle between the internasals. Prefrontals broad, bent downward at the sides. Frontal broad anteriorly, contracted in the middle. Supraciliaries long, broad, prominent, convex. Nasal divided, nostril between. Loreal longer than high. Preoculars two; lower very small, in a notch between the third and fourth labials; upper produced above the loreal, sometimes reaching the vertical. Postoculars two, lower on the fifth labial. Two temporals in contact with the orbitals. Labials eight, seventh largest. Infralabials ten, fifth largest. Submentals two pairs, the hinder longer. Scales smooth, lozenge-shaped, truncate at the end, in 15 rows, outer broad. Ventrals 209. Anal bifid. Subcaudals 135—157 pairs.

A narrow longitudinal line of brown or black in the middle of each row of scales. A dorsal band of brown about seven scales in width obscures those of the medial rows; those on several of the outer rows are black. At the upper edge of each flank there is a narrow band about one scale in width of orange or red. The longitudinal lines on the outer rows are more or less distinctly separated by spaces of orange. A rather indistinct band of reddish-brown extends along each side of the abdomen, separated from the first brown line by a space of yellow. Belly and throat yellow, spotted with brown anteriorly. Orbitals and crown-shields with yellow margins or spots. Wyoming to Texas, California and Mexico.

SPILOTES.

Wagler, 1830.

Body long, compressed; head distinct from the neck, muzzle rounded; tail moderate. Eye large, pupil round. Teeth equal, smooth. A loreal. Anteorbital one, rarely two. Postoculars two to three. Scales keeled or smooth, in 15—23 rows. Anal entire. Subcaudals in two rows or simple.

(*Georgia.*)

Scales smooth, in 17 rows; subcaudals generally simple;
  black; labials seven; ventrals 184—190 *couperi.*
  black, with reddish-white spots; labials eight *obsoletus.*

(*Spilotes.*)

Scales smooth, in 17 rows, rarely 15; subcaudals usually in two rows;
  brown; lighter anteriorly, with faint indications of transverse zigzag bands of dark; ventrals about 205 *corais.*
Scales faintly keeled, in 15 (15 to 17) rows;
  yellowish, marked with chevron bands of brown; darker posteriorly; ventrals about 220 *variabilis.*

  16 rows of scales;
    posterior two thirds of body black *melanurus.*
  18 or 19 rows of scales;
    hinder third of body with chevron bands of yellow *auribundus.*
  21 to 23 rows of scales;
    uniform brown above, a few vertebral scales yellow with black tip *poecilonotus.*

SPILOTES COUPERI.

COLUBER COUPERI *Holbrook*, 1842, *Herp. N. Amer. III*, 75.

SPILOTES COUPERI *Cope*, 1860, *Pr. Ac. N. Sc., Phil.*, 342 *and* 564.

Elongate, stout; head distinct from the neck, high, crown arching longitudinally; tail short, near one sixth of the total. Crown-shields nine. Rostral broader than high. Frontal about as broad as long. Nasal in two parts, nostril between. A loreal. Oculars 1—2, anterior large. Labials seven, anterior smaller, eye over the fourth and fifth, fourth supporting the postorbital, fifth small triangular, sixth very large, extending forward over the fifth, seventh large. Scales lustrous, imbricate, smooth, in 17 rows. Ventrals 184—190. Anal entire. Subcaudals 60, not divided.

Lustrous black. Belly more or less plumbeous; yellowish under the throat and neck. The young are probably more yellow on the anterior portions. Georgia, Texas.

SPILOTES OBSOLETUS.

COLUBER OBSOLETUS *Holbrook*, 1842, *N. A. Herp. III, p.* 61, *pl. XII.*

Body long, stout, compressed; head distinct from the neck; tail near one sixth of the total. Eye medium, over the fourth and fifth labials. Labials eight, fifth and seventh not in contact, sixth small, wedge-shaped. Infralabials nine, fourth and fifth largest. A loreal, sometimes two. Orbitals 1—2, posterior resting on the fifth labial. Scales in 17 rows. Ventrals 193. Subcaudals 56—60.

Black, plumbeous below; anterior half of the body with reddish-white spots on the bases of some of the dorsal scales, and on the bases of ventrals. On the sides and under the head yellowish-red. Posterior margins of labials and lower plates of the head black. Texas.

SPILOTES CORAIS.

COLUBER CORAIS *Daudin*, 1803, *Hist. Rept. VII*, 23.

SPILOTES CORAIS *Dum. & Bibr.*, 1854, *Erp. Gén. VII*, 223.

Elongate, stout, somewhat compressed; head large, subquadrangular in cross section at the eye, crown flat; tail rather less than one fifth of the total, tapering. Eye moderate, pupil round. Mouth-cleft deep, curved. Teeth gradually enlarging backward, smooth. Snout prominent, broad, rounded. Crown-shields normal. Internasals subquadrate. Frontal and prefrontals short; the latter bent down on the sides of the face to the loreal. Rostral broader than high. Nasal divided. One preocular, broader above, Postoculars two, small. Temporals 2+2, upper anterior small. Labials eight, anterior four small, fourth and fifth under the eye, sixth triangular, seventh and eighth very large, the last separated from the parietals by a pair of large temporals. Infralabials nine, fourth and fifth larger. Submentals two pairs, subequal. Scales large, smooth, in 17 (15 to 17) very oblique rows, outer broad. Ventrals 206, large, broad, bent up on the sides. Anal entire. Subcaudals 72 pairs.

Brown, lighter posteriorly, with faint indications of zigzag transverse bands of darker. These bands occupy the margins of the scales and are more distinct on the removal of the epiderm. Belly, chin, and throat little lighter than the upper portions. Brazil to Venezuela, possibly to Mexico.

SPILOTES VARIABILIS.

Dumeril & Bibron, 1854, *Erp. Gén. VII,* 220.

Long, slender, compressed; head large, long, subquadrangular in section across the eye, snout broad, crown slightly convex over frontal and parietals; tail moderately slender, less than one third of the total, tapering. Eye large, pupil round. Nostril lateral. Mouth-cleft deep, curved. Teeth equal, smooth. Crown-shields normal, broad. Rostral broader than high, reaching the top of the snout, convex. Prefrontals bent down on the side of the face. Nasal divided. Loreal small. One preocular, large, reaching the top of the head. Postoculars two, equal. Temporals 1+2. Labials nine, the anterior three with the fifth and seventh small, eye over the fourth, fifth, and sixth, seventh triangular, allowing the sixth and eighth to meet above it, eighth very large. Infralabials ten, sixth larger. Submentals two pairs, equal. Scales large, much imbricate on the sides, faintly keeled, in 15 rows (irregular, 15 to 17, if small scales irregularly interspersed with the larger are counted). Ventrals 220, broad, bent up on the sides. Anal entire. Subcaudals 121 pairs.

Anteriorly white (yellow in life), marked with chevron bands of brown or black, posteriorly more dark color. Belly whitish with prolongations from the dorsal bands extending upon it. Head whitish, marked with black (a spot on each parietal and supraorbital margined with black). A large black spot on each side of the neck immediately behind the head. Total length 23½ inches; tail 5½ inches. Quite variable in colors and squamation. South and Central America to Mexico.

SPILOTES MELANURUS.

Duméril & Bibron, 1854, *Erp. Gén. VII*, 224.

Specimens belonging to this species differ from those of *S. variabilis* in that the posterior two thirds of the body are entirely black. Temporals 1+1+2. Labials eight. Keels on the scales obsolete, faintly indicated near the middle of the body. Rows of scales 16. Ventrals 226. Anal entire. Subcaudals 123 pairs. Total length 58½ inches; tail 15¼ inches.

SPILOTES AURIBUNDUS.

Cope, 1861, *Pr. Ac. N. Sc., Phil.*, 300.

Labials eight, ultimate as high or higher than the penultimate, fifth large, approaching or reaching the postocular. Scales in 18 or 19 rows, weakly keeled, first four or five smooth.

Crown of head yellow, crossed by four more or less irregular cross-bands of black. Posterior third of body crossed by numerous narrow, chevron-formed cross-bands of yellow; the tail annulate with the same. Mirador, Vera Cruz.

SPILOTES POECILONOTUS.

Günther, 1858, *Cat. Col. Snakes in Brit. Mus.*, 100.

Elongate, compressed; head distinct from the neck, rounded in front; tail slender. Rostral broader than high, just reaching the top of the head. Internasals short, broader behind; prefrontals much larger. Frontal broad in front, obtuse-angled behind. Supraciliaries broad behind. Parietals short. One preocular, not reaching the frontal. Postoculars two. Loreal present. Nasal divided. Labials nine, fourth, fifth, and sixth in orbit. Scales elongate, much imbricate, in 21—23 rows, dorsal keeled, the three vertebral most strongly. Ventrals raised on the sides. Anal entire. Subcaudals in two rows.

Uniform brown above, with the exception of some scales in the medial row, which are yellow, with black tip. Head yellow and brown variegated. Belly yellow anteriorly. Ventrals black-edged about the middle of the body, becoming entirely black posteriorly. Total length 63 inches; tail 18 inches. Honduras, Mexico.

PITYOPHIS.

Holbrook, 1842, *N. A. Herp. IV*, 7.

Long, moderately stout, compressed; head distinct from the neck, subconical, broad posteriorly, pointed at the muzzle; tail rather short. Eye moderate, pupil round. Teeth equal, smooth. Crown-shields nine to eleven. Prefrontals one to two pairs. Nasal divided. A loreal, rarely suppressed. One to two preoculars. Postoculars two to five. Scales keeled, in 27 to 35 rows. The individual variation is very great in specimens belonging to species of this genus, particularly so in those of the Rocky Mountains.

PITYOPHIS MELANOLEUCUS.

COLUBER MELANOLEUCUS *Daudin*, 1799, *Hist. Nat. Rept. VI*, 409.

PITYOPHIS MELANOLEUCUS *Holbrook*, 1842, *N. A. Herp. IV, p. 7, pl. I.*

Long, moderately stout, slightly compressed; head moderate, distinct from the neck, appearing subquadrangular when viewed from the front, narrowing forward, conical or pointed, crown slightly convex, very broad behind; snout prominent; tail short, rather less than one seventh of the total, stout, tapering. Eye moderate, pupil round. Mouth-cleft deep, slightly curving. Crown-shields more or less irregular, commonly two pairs of prefrontals. Rostral very prominent, narrow, swollen, extending on the upper surface of the head, between the internasals. Internasals short, wide. Outer prefrontals extending on the side of the face to the loreal, inner narrow posteriorly. Frontal broad anteriorly. Supraciliaries prominent, broadening backward. Parietals large, nearly as wide as long. Nasal in two parts, nostril between. Loreal small, sometimes united with adjacent plates. One preocular. Postoculars three to four. Two or more temporals in contact with the postoculars, sometimes broken into small scales. Labials eight, fourth below the eye, fifth under the postorbital, seventh largest. Infralabials thirteen to fourteen, fifth and seventh large, hinder very small. A pair of large submentals, followed by a pair of smaller ones, which are separated by a pair of small plates. Scales lozenge-shaped, usually in 27 or 29 rows (ranging in the different varieties from 27 to 35), outer broad, lateral smooth, vertebral keeled. Ventrals 212—216, broad. Anal entire. Subcaudals 58 to 60 pairs.

Color whitish, tinged with red on the back, with a dorsal series of large spots of dark brown or black—becoming bands posteriorly—thirty or more in number. Flanks with four series of small spots, alternating, more or less irregular faded and broken; the lower series on the edge of the abdomen. Posteriorly the lateral spots unite into a short vertical band, and upon the tail this unites with the dorsal spot, forming a transverse band. Head-shields spotted with brown. A band across the posterior extremity of the prefrontals through the eye, across the cheek above the angle of the mouth, a vertical wedge-shaped bar below the eye, and the margins of the labials black. On old specimens these bands are often obsolete, as is also the case to some extent with spots of the back and flank. The scales generally have a darker line along the middle. A specimen from Florida has three series of alternating quadrate brown spots on the belly, back nearly uniform brown posteriorly, clouded and spotted anteriorly, and the dorsal spots rather indistinct.

PITYOPHIS CATENIFER.

Loreal one, sometimes two. Preocular one, often two, lower small. Postoculars two to five, commonly three. Rows of scales 31 to 33. Ventrals 222 to 243. Subcaudals 58 to 72 pairs.

Spots 90 to 98 (19 to 23 on the tail). The band across the head through the eyes is distinct to obsolete. The vertical bar under the eye is usually distinct. Dorsal and upper lateral series of spots more or less confluent so as to form a chain on the back; in cases where the spots are separate the effect is much the same. The colors vary much in intensity; the spots are sometimes black, and occasionally quite indistinct. The ground color varies from white to reddish brown. Ventrals 230—247. Subcaudals 60—71. Oregon to Lower California.

var. SAYI.

Closely resembling *P. melanoleucus.* Spots rather more numerous, though not so many as in *P. bellona.* Sometimes two loreals. Preoculars 1 (1—2). Postoculars 3 (2—4). Scales in 27—29 rows. Ventrals 220—240. Subcaudals 52—55 pairs.

Belly more or less blotched in the middle. Mississippi Valley to Rocky Mountains, and southward to Mexico.

var. MEXICANUS.

Prefrontals two pairs, sometimes soldered into a single pair. Preoculars two, lower small. Postoculars four. Labials nine, fifth in the orbit. Scales in 33—35 rows. Ventrals 229—239. Subcaudals 57 to 65 pairs. Reaches a length of seven feet.

With the band across the frontal and behind the eye. More or less spotted. Southwestern part of Mexico. (From descr.)

var. BELLONA.

Ground color lighter than in *P. melanoleucus*. Body more slender; apparently not reaching the same dimensions. In large specimens the bar below the eye and that across the head to the angle of the mouth are conspicuous. Dorsal series of spots from 70 to 80. Some specimens have the colors very much faded, others have the spots very black and distinct, particularly on the tail. The young have four alternating series of spots on each flank, the lower on the outer edge of the abdomen. Scales in 31 to 35 series. Ventrals 220—231. Subcaudals 43—63. I have taken this species at great distances from water on the open prairies. Rocky Mountain region.

ELAPHIS.

ELAPHIS *Aldrovandus*, 1640 *and* 1765; *Bonaparte*, 1831 *and* 1840; *Duméril & Bibron*, 1852 *and* 1854; *Günther*, 1858.
ELAPHE *Fitzinger*, 1833 *and* 1843.

Of moderate slenderness, slightly compressed, belly flat; head distinct from the neck, crown flat, muzzle rounded; tail moderate, tapering. Eye medium, pupil round. Teeth equal, smooth. A loreal. Nasal in two parts, nostril between. Orbitals 2—2 to 3. Scales keeled, in 19 to 25 rows. Anal bifid or entire. Subcaudals in two rows. In particular cases the carination of the scales becomes obsolete.

(*Scotophis.*)

Anal entire;
- Light greyish-brown (reddish in life), with dorsal blotches of brown or black, varying to uniform black *obsoletus.*
- Pale red, with darker black-bordered blotches on the back, varying to black, with a few white markings under the chin and neck *guttatus.*

Anal bifid;
- with four longitudinal brownish bands *quadrivittatus.*

ELAPHIS OBSOLETUS, *pl. IV., fig.* 2.

COLUBER OBSOLETUS *Say*, 1823, *James' Acct. of Long's Exp. I*, 140.

Long, slender, tapering to head and tail, compressed; belly flat, angled at the edges; neck small; head large, broad behind, narrow in front of the eyes, depressed, with flat crown; tail short, near one fifth of the total, slender. Eye moderately large, over the fourth and fifth labials, pupil round. Mouth-cleft deep, curved. Head-shields nine, broad. Frontal broad anteriorly. Prefrontals bent down on the side of the face. Snout prominent. Rostral large, a little broader than high, convex. Nasal in two parts, nostril between. Loreal low. One large anteorbital. Postorbitals two. Temporals 2+3. Labials eight, seventh largest. Infralabials twelve, sixth largest. Submentals two pairs, the hinder separated by small scales. Scales lozenge-shaped, extremity rounded, in 27 rows, two or more of the outer smooth, medial keeled, those on the flanks more faintly. Ventrals about 233. Anal entire. Subcaudals about 85 pairs.

Light greyish-brown, reddish in life, varying to black. In light colored specimens of small size there is a dorsal series of about forty large spots, with darker edges, separated by narrow spaces of light color. On the flank three series of alternating spots, the spots in each half as large as the next above. On the extremities of the abdominals a series of twice as many quadrate spots. On each side of the median line of the belly a series of quadrangular blotches. In large specimens only the upper and lower of the series on the flank can be distinguished. A dark-edged band across the postfrontals, through the eye, over the angle of the mouth. A pair of diverging bands from the parietals to the neck. Anterior spots more or less confluent. Darkening with age until nearly or quite black. East of the Rocky Mountains.

var. ALLEGHANIENSIS.

Dark brown to lustrous black, mottled with white under the throat. Series of scales 27. Alleghany region and eastward.

var. LINDHEIMERII.

Dark plumbeous, with brown or black blotches on back and flanks. Series of scales 29. Texas.

Through its varieties this species is so closely related to the following that the separation is a matter of considerable difficulty. It is quite likely that a larger series of specimens may render the degradation of *E. obsoletus* to the rank of a variety of *E. guttatus* unavoidable.

Elaphis guttatus, *pl. IV, fig.* 1.

Coluber guttatus *Linné*, 1766, *Syst. Nat. ed. XII*, 385.

Elaphis guttatus *Dum. & Bibr.*, 1854, *Erp. Gén. VII*, 273.

Elongate, compressed, belly flat, angled at the sides; head elongate, distinct from the neck, tapering regularly to the moderately broad snout, crown flat; tail short, stout, nearly one sixth of the total, tapering. Eye moderate, over the fourth and fifth labials, pupil round. Mouth-cleft deep, curved. Head-shields nine, broad. Parietals broad. Frontal broad anteriorly. Prefrontals bent down on the side of the face. Internasals small. Rostral large, convex. Nasal in two parts, nostril between. A loreal. One large anteorbital. Two postorbitals. Temporals 2+3. Labials eight, seventh largest. Infralabials eleven (10—12), second small, sixth largest. Submentals two pairs, hinder separated by small scales. Scales lozenge-shaped, fore extremity rounded, in 27 rows (with the varieties 25—29), dorsal faintly keeled, keels obsolete on the lateral, two or more of the outer slightly broader and smooth. Ventrals broad, 217 to 236. Anal bifid. Subcaudals 63 pairs.

Pale red in life (brownish-yellow in alcohol), with about forty dorsal blotches of darker red, with a narrow border of black, anteriorly longer than broad, posteriorly broader than long, reaching to a point near the middle of the flank, separated by spaces of two or three scales in width. On the flank several (3 to 4) alternating very irregular and indistinct series of spots, the lower reaching the keel of the edge of the abdomen, and having twice as many spots as the others. Below yellowish with quadrangular blotches of black, alternating on each side of the median line or confluent. Head reddish, with a darker black-edged band across the hinder portion of the postfrontals through the eye across the angle of the mouth; a similar diverging band across the parietals to the neck, inclosing a light-colored space on the top of the neck and back of head. Vertical margins of labials and infralabials more or less black. The pattern of markings is usually confused, except in young specimens.

var. VULPINUS.

Light brown, more or less red or gray, with broad quadrate blotches of chocolate or brown. Series of scales 25. Michigan and adjacent States.

ELAPHIS QUADRIVITTATUS.

COLUBER QUADRIVITTATUS *Holbrook*, 1842, *N. A. Herp. III*, 89.

ELAPHIS QUADRIVITTATUS *Dum. & Bibr.*, 1854, *Erp. Gén. VII*, 265.

Elongate, compressed, angled at the sides; neck small; head distinct elongate, tapering regularly to the moderately broad snout; crown flat; tail short, near one fifth of the total, tapering. Eye moderate, over the fourth and fifth labials, pupil round. Mouth-cleft deep, curved. Head-shields nine, broad. Frontal broader anteriorly. Prefrontals bent down on the face. Internasals much smaller than prefrontals. Rostral large, broad. Nasal in two parts, nostril between. A loreal. Anteorbital large. Two postorbitals. Temporals 2+3. Labials eight, seventh largest. Infralabials eleven, second small, sixth largest. Submentals two pairs, hinder smaller and separated by small scales. Scales lozenge-shaped. Extremity rounded, in 27 rows, dorsal faintly keeled, lateral with faint keels, two or more of the outer broader and smooth. Ventrals 238. Anal bifid. Subcaudals 95.

Light yellowish-red (tinged with green anteriorly), with four longitudinal bands of brownish-red. The bands occupy the third to the fifth and the tenth to the twelfth rows on each side. Belly mottled with brownish-red. These colors occupy only the epiderm; that taken off, the markings appear as in the species *guttatus*. The head is uniform yellowish-red, with a faint tinge of green, but on close observation the outlines of the head-bands can be readily traced. A specimen before me, secured by Prof. J. A. Allen in Florida, has the colors of *quadrivittatus*, bands and all, and at the same time the black-margined spots and shorter tail of *C. guttatus*.

DROMICUS.

Bibron, 1843.

Body somewhat slender, rounded; head distinct from the neck, long, ovoid, crown flat; tail tapering. Eye medium, pupil round. Posterior maxillary teeth longer, smooth. A loreal, in one species united with prefrontal. Crown-shields nine. Nasal in two parts. Orbitals 1—2. Scales smooth, commonly in 17 or 19 rows, rarely reaching 15 or 23. Common in the West Indies and South America to Mexico. One species found on the southeastern coast of the United States.

- A loreal;
  - scales in 17 rows; labials seven;
    - ventrals about 163; a band on three vertebral series *laureatus.*
    - ventrals about 126; dorsal band on eleven series *flavilatus.*
  - scales in 17 to 19 series;
    - labials nine *margaritiferus.*
- No loreal;
  - scales in 19 series;
    - labials eight *putnami.*

DROMICUS LAUREATUS.

Günther, 1868, *Ann. & Mag. Nat. Hist.*, 419.

Body and tail moderately slender; form of the head as in *Coronella laevis.* Eye of moderate size. Maxillary teeth smooth, becoming longer, stronger and further apart backward. Internasals scarcely half as large as prefrontals. Frontal longer than the snout. Parietals longer than the frontal. Rostral not extending to the upper surface of the head. Loreal square. One preocular reaching to the upper surface of the head, but not touching the frontal. Postoculars two. Labials seven, third and fourth in orbit. Temporals 1+2+3, the anterior touching both oculars. Submentals two pairs, nearly equal. Scales smooth, in 17 rows, many with a small apical groove. Ventrals 163. Anal bifid. Subcaudals 95 pairs.

A lead-colored band three scales broad from the nape along the median line of the back to the end of the tail. Flanks reddish, with a very indistinct greyish streak along the fourth outer series of scales. Two yellow lines across the rostral; the lower runs along the upper labials and across the neck, thus entirely encircling the head; the upper runs along the canthus rostralis, and stops or terminates in the temporal region. Lower parts uniform yellowish. Length 21 inches; tail 7 inches. City of Mexico.

DROMICUS FLAVILATUS.

Cope, 1860, *Pr. Ac. N. Sc., Phil.*, 222.

Habit moderately slender; head distinct from the neck, elongate, oval; tail 3.2 times in the total. Crown-shields nine. Internasals nearly quadrate. Prefrontals longer than wide. Frontal three fourths as long as wide. Labials seven, third and fourth in the orbit, fifth higher than long, with the sixth separated by a narrow temporal from the parietal, seventh longer than high. Infralabials nine, four bounding the submentals. Nostril in the anterior portion of the divided nasal. Loreal very small, high as long. Oculars 1—2. Scales thin, without pores, in 17 series. Ventrals 126. Subcaudals 77 pairs.

A rich golden brown above, the scales of the two inferior rows on each side broadly gold-edged, the color of the back commencing on the third row. Ends of the scales of the vertebral row sometimes darker tipped. Head dark brown, darkest behind, with numerous but obscure paler vermiculations. Side of head paler, with a reddish-brown band from the rostral plate through the eye to the middle of the last labial. Labials whitish, with black dots on the posterior in oblique rows. Below white, lower labials sparsely black dotted. A pair of pale dots on the common occipital suture. Fort Macon, N. C.

DROMICUS MARGARITIFERUS.

HERPETODRYAS MARGARITIFERUS *Schlegel*, 1837, *Ess. Phys. Serp.*, 184 *pt. II; and Abbild. t.* 44, *fig.* 19—20.

DROMICUS MARGARITIFERUS *Günther*, 1858, *Cat. Col. Snakes*, 126.

Elongate, moderately slender; head distinct from the neck, long, crown flattened, muzzle prominent; tail slender, near one half of the total length. Eye rather large, pupil round. Mouth deeply cleft, curved. Upper postmaxillary teeth large, isolated, smooth. Crown-shields nine. Prefrontals bent down to the loreal. Nasal divided. Loreal longer than high. One anteocular. Postoculars two, followed by two temporals. Labials nine, fourth, fifth, and sixth in the orbit, the three preceding the last large. Infralabials ten, sixth large. Submentals two pairs, posterior larger. Scales lozenge-shaped, in 17—19 rows, feebly keeled, outer two or three broader and smooth. Ventrals 154 (Schlegel), 115 (Duméril). Anal bifid.

Greenish-yellow on flanks and below. All the scales bordered with brown. The medial rows are described as black, with a whitish or yellowish center. Top of head yellowish-brown. Mexico and Central America.

DROMICUS PUTNAMI.

Jan., 1863, *Elenc. Sist. Ofid.* 67; 1867, *Icon. Ophid. Livr.*, 24, *pl.* 6, *fig.* 3.

Moderately slender, belly broad; head distinct from neck, depressed, narrow anteriorly; tail near one fourth of the total, tapering, pointed. Eye moderate, pupil round. Mouth-cleft deep, slightly curved. Crown-shields nine. Rostral erect, broader than high. Internasals moderately large. Prefrontals bent down on the side of the face. No loreal. Frontal narrow, hexangular. Supraciliaries large. Parietals large. Nasal in two parts. Oculars 1—2. Temporals 1+2+3. Labials eight, third, fourth, and fifth in orbit. Infralabials ten, fifth and sixth large, third not in contact with the submentals. Submentals two pairs, nearly equal. Scales smooth, glossy, in 19 rows, dorsal narrow, lateral broader. Ventrals 171. Anal bifid. Subcaudals 81 pairs.

Light brownish, with a dorsal band of brown three and two half scales wide. Outer row of scales a shade darker than the flanks. Belly lighter. Dorsal band continuing forward on the head. A narrow light-edged brown line from the eye toward the angle of the mouth. Total length $21\frac{3}{4}$ inches; tail $5\frac{1}{2}$ inches. San Blas, Jalisco, Mexico.

CORONELLINAE.

Subcylindrical, moderate to stout; head more or less distinct from the neck, which is rather stout; tail tapering, thick or slender. Snout moderate. Teeth equal and smooth; or posterior larger, separated by an interspace, smooth or grooved. Eyes small to moderate, pupil round (except in *Mesotes* and possibly *Hypsiglena*). Scales smooth, or, in exceptional cases, keeled.

Posterior maxillary teeth longer, grooved;	
scales in 17 to 21 series	TACHYMENIS.
scales in 15 series	ERYTHROLAMPRUS.
Maxillary teeth compressed, posterior longer, smooth;	
anal entire	OPHIBOLUS.
Postmaxillary teeth longer, generally separated by an interspace;	
anal usually bifid	LIOPHIS.
Teeth equal, smooth;	
anal bifid	DIADOPHIS.
rostral swollen, bent back on the snout	RHINOCHEILUS.

Postmaxillary teeth larger, separated by an interspace;
rostral trihedral, sharp-angled HETERODON.
Postmaxillary teeth longer, smooth;
rostral swollen, rounded CEMOPHORA.
eye large, pupil round XENODON.
eye small, pupil subelliptical HYPSIGLENA.

TACHYMENIS.

Wiegmann, 1834.

Moderately stout to slender; belly broad, rounded; head distinct from the neck, narrow in front; tail moderate, tapering. Eye moderate, pupil round or subcircular. Posterior maxillary teeth longer, grooved; anterior equal or slightly longer than those immediately following. Loreal present or united with other shields. Crown-shields nine. Internasals somewhat narrow in front. Oculars 1—2. Scales smooth, in 17 to 21 rows. Anal bifid.

Labials seven; scales in 19 series;
longitudinal bands, continued on the head *lineata.*
ending at the back of the head *imperialis.*
vermilion, shading through orange to the golden beneath *lateritia.*
a dark band with white borders on each side of the neck *proterops.*
Labials eight; scales in 21 (19—21) rows;
a white band on each side of the anterior part of the trunk *fissidens.*
brown, with an indistinct dorsal streak *bipunctata.*
head and neck brown; behind this a yellowish neck band of about four scales in width *melanocephala.*

Several of these species can hardly be regarded as firmly established. The descriptions are insufficient for comparison.

TACHYMENIS LINEATA.

TOMODON LINEATUS *Duméril & Bibron*, 1854, *Erp. Gén. VII*, 936, *pl.* 73.

Head distinct from the neck; tail near one fourth of the total. Posterior upper maxillary teeth longer, grooved. Crown-shields normal. Rostral convex, bent backward. Nasal in two parts. Loreal trapezoidal. One anteocular. Postoculars two, subequal. Labials seven (7—8), gradually increasing in height backward to the penultimate, third and fourth in orbit (3d to 5th). Infralabials eight. Submentals two pairs, subequal, posterior diverging. Scales smooth, in 19 rows. Ventrals 159—169. Anal divided. Subcaudals 62—70 pairs.

Gray above, white below. A band of brown from the forehead to the tail. A brown line from each nostril along the side of the head and middle of the flanks, black-edged and becoming black backward. Labials and infralabials marked with brown. Sometimes a brown or black line near the edge of the abdomen. The dark edges of the subcaudals form a line under the middle of the tail.

TACHYMENIS IMPERIALIS.

TAENIOPHIS IMPERIALIS *Baird (Kenn.)*, 1859, *U. S. and Mex. Boundary Survey Rept.*, 23, *pl. XIX, f.* 1.

Form tapering anteriorly and posteriorly; tail continuous with the body; head distinct from the neck; snout rounded. Rostral gibbous, twice as broad as high. Loreal as high as long. Internasals one third as large as prefrontals, larger than the loreal. Frontal elongate, narrow, pentagonal, scarcely wider anteriorly. Anteocular one, large, wider above. Postoculars two, small, upper largest. Scales smooth, in 19 rows, central narrow and acute, outer broader.

Deep purplish black above, with two dorsal stripes of yellowish-brown from head to tip of tail, and separated by a narrow vertebral line of the ground color. Head black above, with two narrow yellow lines from the nostrils to the sides of the occiput, crossing the upper angle of the orbit. Labials and under part of head yellowish, minutely mottled with black. Ground color of the back extending on to the ends of the ventrals. Middle of the abdomen uniform light yellowish in the alcoholic specimen, said to be bright red in life. (From descr.) Brownsville, Texas.

TACHYMENIS LATERITIA.

CONIOPHANES LATERITIUS *Cope*, 1861, *Pr. Ac. N. Sc., Phil.*, 524.

Head broad, pointed. Muzzle prominent, acute. Loreal square. Oculars 1—2. Labials seven, eye over third and fourth, fifth very large. Infralabials ten. Scales in 19 rows. Frontal nearly as broad as long. Anal bifid. Total length 24 inches; tail 7 inches, Bright vermillion, punctulate with brown, passing through orange to golden on the belly. Head and neck for ten scales backward black. Labials bordered and traversed by yellow lines. Parietals dotted with yellow. (From descr.) Guadalaxara, Mexico.

TACHYMENIS PROTEROPS.

CONIOPHANES PROTEROPS *Cope*, 1860, *Pr. Ac. N. Sc., Phil.*, 249.

Small; head scarcely distinct from the neck, muzzle not elevated. Anterior plates of the head small. Loreal a little longer than high. One pre, two postoculars. Labials seven, third and fourth in orbit. Frontal elongate. Parietals long. Infralabials nine. Submentals two pairs, subequal. Ventrals 130. Anal bifid.

Light brown above, every scale densely punctulated with darker, especially near the margins. From the first to the fourth rows this is deeper, giving the sides a darker shade. The vertebral rows of scales from the occipitals to the end of the tail are also darker. Top of the head densely and obscurely vermiculated and punctulated. The dark shade on the fourth row of scales becomes a band anteriorly, and is bordered above and below with white on the neck. The lower white border is continued to the eye, and is bordered above on the labials with black. The upper white border is discontinued on the neck, but reappears as a spot three scales back of the occipitals. Inferior half of rostral, upper and lower labials, chin, throat, and belly, light brownish-yellow, densely punctulated with brown. Each labial with a darker spot in the center. Fewer punctulations on the urosteges. (From descr.) Jalapa, Mexico.

TACHYMENIS FISSIDENS.

CORONELLA FISSIDENS *Günther*, 1858, *Cat. Col. Snakes*, 36.

Scales in 19—21 rows. Anal bifid. Labials eight, fourth and fifth in orbit.

Back greyish-olive, the darker coloration of the sides well defined towards the back. A black streak, sometimes white-edged beneath, through the eye. On both sides of the anterior part of the trunk a white band, beginning at the occiput, and soon disappearing. Belly white, on the sides some irregular small black spots. Hinder maxillary tooth longest, grooved. Mexico.

TACHYMENIS BIPUNCTATA.

CORONELLA BIPUNCTATA *Günther*, 1858, *Cat. Col. Snakes*, 36.

Moderate; tail rather elongate; head distinct from the neck, rounded, rather pointed in front, crown flat. Rostral just reaching the top of the head. Internasals small. Prefrontals much larger. Parietals moderate, rounded behind. Frontal nearly twice as long as broad, with somewhat concave lateral edges. Nasal in two parts, nostril between. A square loreal. One anteocular. Postoculars two. Labials eight, fourth and fifth in orbit. One elongate temporal shield in front, four or five smaller ones behind. Scales rhomboid, rather small, in twenty-one rows. Anal bifid.

Brown, with a very indistinct darker dorsal streak. Darker coloration of the sides well defined towards the back. Labials yellowish above, black-edged. Beneath yellowish; from the chin to the tip of the tail two punctated lines, each ventral plate being provided with two black spots toward the middle; there is another indistinct punctated line on each edge of the abdomen. Total length 17 inches; tail 5½ inches. (From Gthr.)

TACHYMENIS MELANOCEPHALA.

Peters, 1869, *Mb. Berl. Akad.*, 876.

Resembles somewhat *T. bipunctata* in squamation and infralabials. The entire head and neck for ten scales has a blackish-brown ground color, behind which there is a yellowish neck band of four scales in width, while the balance of the body is yellowish-brown above and uniform yellowish beneath. (From descr.) Puebla, Mexico.

ERYTHROLAMPRUS.

Boie, 1826.

Elongate, cylindrical; head not distinct from the neck, rounded, muzzle short; tail short to moderate. Crown-shields normal. Eye moderate, pupil round. Posterior upper maxillary teeth longer, grooved. Nasal in two parts, nostril between. Oculars 1—2. A loreal. Scales in 15 rows. Anal divided.

E. VENUSTISSIMUS. var. D.

Günther, 1858, *Cat. Col. Snakes*, 48.

Colors black, red, and yellow in rings around the body. Rings complete, but not arranged in pairs, broad, alternating with white rings of the same breadths. Muzzle black in front.

OPHIBOLUS.

Baird & Girard, 1853.

Body moderate to stout, rounded; head medium to small, little larger than the neck, muzzle short, rounded, crown flat. Eye medium, pupil round. Maxillary teeth compressed, posterior larger, smooth, not isolated. Nasal in two parts, nostril between, rarely but one nasal. Loreal generally present. One anteocular. Two, sometimes three postoculars. Scales smooth, short, broad, in 17 to 23 rows. Anal entire. Subcaudals in two rows.

- Loreal present or absent;
  - scales in 19 rows; red, with pairs of black rings separated by white or yellowish;
    - ventrals 169 to 176 *doliatus.*
- Loreal present;
  - scales in 21 to 25 rows;
    - colors red, brown, or greyish, to very dark and yellowish;
      - ventrals 180 to 224 *triangulus.*
    - black or brown, with yellowish markings, to whitish or yellowish, marked with dark *getulus.*

OPHIBOLUS DOLIATUS, *pl. V, fig.* 2.

COLUBER DOLIATUS *Linn.*, 1766, *Syst. I*, 379.

Long, slender, subcylindrical; head little larger than the neck, crown slightly convex, narrow forward, snout prominent; tail short, about one seventh of the total, thick, tapering to a point. Eye small, over the third and fourth labials, pupil round. Mouth-cleft medium, curved. Crown-shields nine, broad. Frontal broad, short Supraciliaries and internasals small. Prefrontals bent down on the side, frequently united with the loreal. Nasal in two parts, nostril between. Loreal present or absent, sometimes present on one side and absent on the other as in the specimen figured. Oculars 1—2, lower small. Temporals 1+2. Labials seven, hinder three large and wedged by the temporals. Infralabials eight, fifth large, second and posterior small. Submentals two pairs, hinder smaller. Scales smooth, subhexangular, rounded at the extremity in 19 (17—19) rows, broadening toward the outer, which is as broad as long. Ventrals large, 169—176. Anal entire. Subcaudals 31—43 pairs.

Scarlet in life, reddish-yellow in alcohol, with 20—25 pairs of narrow black rings, those of each pair separated by a yellow band. The space between the pairs is nearly equal to that occupied by the pair and the included yellow. The black rings diverge and become narrow toward the belly, which in cases they do not cross. Occasionally the rings of different pairs unite on the abdomen. The first pair is incomplete, and does not encircle the neck, the anterior ring crosses the hinder extremity of the parietals, and commonly sends forward on the frontal an oblong or square extension, it stops at the angle of the mouth. The yellow rings widen on the ventral surface. Southeastern States.

var. ELAPSOIDEUS.

Loreal shield absent. Southeastern States.

OPHIBOLUS TRIANGULUS, *pl. V*, *fig.* 1.

COLUBER TRIANGULUM *Boie*, 1827, *Isis*, 537.

Moderately stout, subcylindrical; head small, little broader than the neck, depressed, crown slightly convex, snout comparatively broad; tail short, one sixth to one seventh of the total. Eye small, over the third and fourth labials, pupil round. Mouth-cleft deep, not much curved. Crown-shields nine, broad. Frontal broader anteriorly. Internasals small. Prefrontals bent down on the sides of the head. Rostral broader than high, convex. Nasal in two parts, nostril between. Loreal low. Oculars 1—2, lower small. Temporals 2+2 to 3. Labials seven, posterior three larger. Infralabials nine (9—10), fifth large. Submentals two pairs. Scales smooth, lozenge-shaped, ends rounded, in 21 rows, outer as broad as long. Ventrals 200—215 (185—215). Anal entire. Subcaudals 45—55 pairs.

Brownish-yellow (more or less red in life), greyish on the flanks, with broad black-edged blotches of reddish-brown or brownish-red. The yellow separating the dorsal series is narrower than the blotches, and widens toward the flank, where in most varieties it bifurcates, and with the opposite band surrounds a medium-sized, light-centered blotch. Occasionally there are two series of alternating blotches on the flank. Belly yellowish, with quadrate black blotches, often more black than yellow. Back of head with a triangular spot of yellow, bilobed in front. A band of brown across the hinder part of prefrontals through the eye to the angle of the mouth. East of the Mississippi Valley.

var. CALLIGASTER.

Colors somewhat lighter than in specimens from the Eastern States. Scales in 25 rows. Northern portion of Mississippi Valley.

var. MEXICANUS.

Body as in specimens from the Eastern States; head much swollen at the temples. Scales in 23 rows. Ventrals 193—199. Anal entire. Subcaudals 56—58 pairs.

Brownish-grey to greyish-brown, with 38—40 transverse blotches of red, inclosed by black, light-edged rings. These rings may be described as pairs of transverse bands, which unite on the flank just above a large light-edged black spot. The space occupied by the red and black together about equals the dark one separating the rings. Alternating with the spots on the flank there is a series of spots on each edge of the abdomen, which are more or less confluent with the blotches of the middle of the belly. Belly yellow, blotched with black, sometimes much more black than yellow, more yellow forward. Chin and throat yellow. A large black spot behind the eye, V-shaped marks of black on the top of the head, opening forward. First blotch behind the head irregular, emarginate arrow-shaped or divided longitudinally. Mexico, near San Luis Potosi.

var. DOLIATUS, *pl. V*, *fig.* 2.

Red, dorsal blotches more or less ring-like, 20 to 30, with or without the spot on the flank. The triangular spot on the back of the head is replaced by a transverse band, in front of which there is either a narrow black band or the whole top of the head is black, excepting the labials and rostral. Ventrals 181 to 208. Subject to great variation. Hab. southern part of Mississippi Valley.

var. GENTILIS.

Crown-shields, oculars, and rostral black. Prefrontals and loreal mottled with yellow, with twenty to forty yellow rings encircling the body. Between the yellow there are pairs of black rings inclosing a narrow space of red, across which the black is sometimes confluent on belly and back, thus reducing the red color to vertical bars on the flank. (Ventrals 183 in a Utah specimen before me.) Hab. Colorado and Utah.

var. ZONATUS.

Fusiform, round; head small, scarcely distinct from the neck, depressed, rounded, crown slightly convex; tail short, stout to near the end. Eye small, pupil round. Muzzle narrow, rounded. Mouth-cleft nearly straight. Teeth equal, smooth. Head-shields short, broad. Rostral broad, low, convex. Internasals and prefrontals much broader than long. Frontal nearly as broad as long, posterior angle obtuse. Nasal in two parts, nostril between. Loreal very small. One anteocular, nearly as long as high. Postoculars two, lower small. Temporals 2+2. Labials seven, eye over third and fourth, fifth and sixth large. Infralabials eight, fifth large. Submentals two pairs, posterior half as large as the anterior. Scales short, broad, in 21 rows, outer broader than long. Ventrals 213, broad. Anal entire. Subcaudals 51 pairs.

Red. Each scale black-tipped. Head black to the temple. Surrounded by a yellow ring across the hinder portion of the parietals; behind this a complete black ring of equal width—about four scales—touches the angle of the mouth. Body with seventeen pairs of narrow black rings—14th on the vent—confluent on the belly, but including a yellow space of their own width three to four scales on the back, and separated from each other pair by a red space about as broad as that occupied by the pair and included space. Acapulco, Mexico.

O. GETULUS var. PYROMELANUS.

Head distinct from the neck, muzzle contracted; tail five and one half times in the total. Crown-shields nine. Frontal broad. Posterior submentals half as long as the anterior. Dorsal scales in 23 rows, rather broad, outer not abruptly enlarged. Ventrals 224. Anal one. Subcaudals 66 pairs.

Ground color ochraceous white. Fifty to fifty-eight black annuli, on the anterior portion of the body each is split by a vermillion annulus, posteriorly the division is incomplete, all extending with irregularities on the belly. In one specimen all the black annuli to the middle of the tail are divided by the red, leaving the black as a margin to it; they are four scales wide behind the middle of the body. In another only four anterior rings are completely divided, those on the following third of the body being divided by red on the sides; the remaining annuli black, three scales wide; white annuli one and one half scales; anterior or nuchal red annulus widest, its anterior black margin attaining the parietals. An ochraceous band from the yular region, not quite completed, across the parietals. Muzzle, prefrontals, and labial margin ochraceous, remainder of top and sides of head black. Total length 30.5 inches. (From descr.) Sonora.

OPHIBOLUS GETULUS, *pl. V*, *fig.* 3.

COLUBER GETULUS *Linné*, 1766, *Syst. Nat. ed. XII*, 382.

OPHIBOLUS GETULUS *Baird & Girard*, 1853, *Cat. N. A. Serp.*, 85.

Stout, subcylindrical, slightly compressed, belly broad, rounded; neck large; head not very distinct, depressed, narrow in front; tail short, less than one sixth of total, tapering to a point. Eyes medium, over the third and fourth labials, pupil round. Mouth-cleft deep, outline curved. Crown-shields nine, broad. Frontal broader anteriorly. Rostral low, broader than high, convex. Nasal in two parts, nostril between. Loreal small. One large preocular. Postoculars two. Temporals 2+3. Labials seven, increasing in size to the sixth. Infralabials nine, fifth largest. Submentals two pairs. Scales rhomboid, smooth, in 21 rows (21—23), outer broad. Ventrals 210—225 (with the varieties 210—240). Anal entire. Subcaudals 48—55 pairs (48—65).

Lustrous brown to black, exceedingly variable. Back crossed by 25 to 35 narrow yellow bands, which bifurcate on the flanks to meet short longitudinal bars on the outer rows with which they form more or less complete unions to the bands immediately preceding or following, thus inclosing large spaces of black on the dorsal rows. Belly uniform black, black with yellow markings, yellow with quadrangular blotches of black, or nearly to quite uniform yellow. Head spotted with yellow, vertical margins of black. Some specimens are more yellow than black, others have very little yellow. Southeastern United States.

var. SAYI, *pl. V*, *fig.* 4.

Yellow bands more numerous, sometimes indistinct. All or nearly all of the scales yellow in the center. Rows of scales commonly 21. Mississippi Valley and Southwestward.

var. BOYLII.

Broad white transverse bands or spots on the sides. Dorsal rows usually 23. California to Mexico.

LIOPHIS.

Wagler, 1830.

Moderately slender; belly broad, rounded; head little larger than the neck, depressed; muzzle rather short; tail moderate, tapering. Eye moderate, pupil round. Crown-shields nine. A loreal. Oculars 1—2. Posterior maxillary teeth longer, smooth, generally separated by an interspace. Scales smooth in 17 to 19 rows.

LIOPHIS ELAPOIDES.

PLIOCERCUS ELAPOIDES *Cope*, 1860, *Pr. Ac. N. Sc., Phil.*, 253.

Body cylindrical; head scarcely distinct; tail two fifths of the total. Posterior upper maxillary teeth longer, smooth. Crown-shields normal. Rostral just visible from above. Length and breadth of the frontal equal to the length of the suture of the parietals. Two preoculars; upper large, not reaching the frontal; lower small, partially between the third and fourth labials. Postoculars two. Height and length of the loreal equal. Nasal divided. Labials eight, fourth and fifth in orbit. Infralabials eight, the last three times as long as the seventh, sixth largest; these three plates border within a large shield which diverges from the outer posterior extremity of the hinder submental. Submentals two pairs, equal. Scales smooth, in 17 rows. Ventrals 131 (to 143). Anal bifid. Subcaudals 89 pairs. Total length $19\frac{3}{4}$ inches; tail $7\frac{1}{2}$ inches.

Brilliant red bands from four to six scales in width encircle the body; these are separated by black rings, in sets of three, separated by yellow intervals, ten or eleven on the body—one at the anus and six or seven on the tail. The outer ring of each three is one and a half scales wide, and is not continued on the belly; the yellow interval is of the same width, and the central black is three and a half or four scales wide. The first three is on the head and neck; the central black is seven or eight scales wide, and does not extend upon the neck, but involves the ends of the parietals and the last upper labial. The anterior yellow ring crosses the parietals and involves one and a half temporals, the sixth, seventh, and half the eighth upper labials. All the head anterior to this is deep lustrous black, except a narrow oral border of yellow. Chin immaculate. Many of the scales of the body are tipped with brown, many with black. (From descr.) Jalapa, Mexico.

DIADOPHIS.

Baird & Girard, 1853.

Small. Body subcylindrical, slightly depressed, slender; head distinct from the neck, depressed; tail short, tapering. Teeth equal, smooth. Crown-shields normal. Loreal present. Nasal divided. Eyes medium, pupil round. Mouth-cleft deep. Scales smooth, in 15—17 rows. Anal bifid. Subcaudals in two rows.

With pairs of transverse bands;	
scales in 17 rows	*annulatus.*
with a white band along each side of head and neck	*decoratus.*
with three longitudinal bands of brown	*fulvivittis.*
with an occipital band;	
scales in 15 rows;	
ventrals 148—160	*punctatus.*
ventrals about 190	*docilis.*
scales in 17 rows; occipital band rarely absent;	
ventrals more than 200	*regalis.*

DIADOPHIS ANNULATUS.

ENICOGNATHUS ANNULATUS *Duméril & Bibron*, 1854, *Erp. Gén. VII*, 335.

Head little larger than the neck, slightly convex, muzzle rounded; tail stout, long, near half as long as the body. Eye moderately large, pupil round. Crown-shields nine, broad. Angle of rostral between internasals nearly a right one. Rostral convex. Loreal small, lower behind than in front. Prefrontals decurved to the loreal. One large preocular. Postoculars two. Labials eight, fourth, fifth, and sixth in orbit, latter large. Scales smooth, lozenge-shaped, in 17 rows. Ventrals 142. Anal divided. Tail broken.

Brown, tinted with green. Head varied with black on the supraciliaries, temporal region, and in three bars beneath the orbit. Neck tinged with reddish, with pairs of transverse bands on the dorsal rows, followed by three series of vittae or spots of black on the median and third or fourth lateral rows. Flanks and ends of ventrals punctulate with brown. (From descr.) Coban (Haute Vera Paz).

DIADOPHIS DECORATUS.

CORONELLA DECORATA *Günther*, 1858, *Cat. Col. Snakes*, 35.

Body moderate, slightly depressed; head distinct, depressed; tail slender, near one third of the total. Eye moderate, pupil round. Crown-shields regular. Internasals and prefrontals broad. Frontal broad, acute-angled posteriorly. Parietals large, in length equal to that of the head in front of them. Nasal small, in two parts, nostril between. Loreal an irregular polygon, in contact with six plates. Anteorbitals three, lower very small, in notch between third and fourth labials. Postoculars two, lower smaller. Temporals 1+2, or fused with labial. Labials eight, fourth and fifth in orbit, seventh large and abruptly higher than the sixth. Infralabials nine, sixth large. Submentals two pairs, subequal, posterior diverging. Scales smooth, flat, rounded at the extremity, in 17 rows, outer broader. Ventrals 160. Anal bifid. Subcaudals 107 pairs, sometimes a few simple.

Greyish-brown, head darker, lighter toward the tail. A narrow white dark-edged band from the muzzle along the facial angle through the upper postocular slightly downward to the neck, then rising and occupying the fifth row of scales on the body, where it becomes brownish, and continues as a light line above a narrow line of dark on the fourth row. A narrow black line on the vertebral row. Labials and ventral surface whitish, the anterior labials and each extremity of the ventrals with a spot of dark. Length 9⅛ inches; tail 3⅛ inches. Mountains of Alvarez, Mexico.

DIADOPHIS FULVIVITTIS.

RHADINEA FULVIVITTIS *Cope*, 1875, *Batr. and Rept. Costa Rica*, 139.

Very likely to prove a variety of the preceding. "Head small, not very distinct from the body. Frontal a little longer than the suture from it to the nasals, and a little shorter than the common suture of the occipitals, two-thirds as wide as long. Rostral small, low; postnasal higher than long; loreal as high as long. Superior labials eight, seventh highest; temporals 1—1. Inferior labials ten, sixth largest, in contact with middle of post geneials. Scales poreless, in 17 rows. Gastrosteges 177. Anal divided; urosteges 91.

"Color above fulvous, below fulvous yellow. The three brown bands extend from the end of the nose to near the end of the tail; the lateral involves the fourth and half of each adjacent row of scales, and is black-edged; the dorsal is three and two half scales wide, and is also black-edged. The brown is paler on top of the head, and the ground color is a narrow yellow band to the eye. Lips yellow, like the lower surfaces, unspotted." Orizaba, Vera Cruz.

DIADOPHIS PUNCTATUS, *pl. II, fig. 2.*

COLUBER PUNCTATUS *Linné*, 1766, *Syst. Nat., ed. XII, I*, 376.

DIADOPHIS PUNCTATUS *Baird & Girard*, 1853, *Cat. N. A. Serp.*, 112.

Body slender, subcylindrical, slightly depressed; head distinct from the neck, depressed, crown flat; tail near one fifth of the total, tapering to a point. Crown-shields normal, broad, anterior short. Rostral broad, low, not reaching back on the head. Snout prominent, rounded. Frontal pentagonal. Nasal divided, nostril mainly in the anterior portion. Loreal nearly square. Oculars 2—2. Temporals 1+1. Labials seven, sixth largest, third and fourth in orbit, or labials eight, seventh larger, fourth and fifth in orbit. Infralabials eight, fifth very large. Posterior submentals half as large as the anterior. Eye moderate, pupil round. Mouth-cleft deep, more than half behind the eye. Scales smooth, in 15 rows, dorsal narrow, outer as broad as long. Ventrals 148—160. Anal bifid. Subcaudals 36—56 pairs.

Uniform bronzed, ashy or greenish brown above, with a narrow yellowish, dark-edged band across the occiput (sometimes obsolete). Hinder edge of the extremities of the ventrals with a black spot, giving the appearance of a zigzag line. Belly yellow or orange, purplish or reddish, uniform or with black spots, irregularly scattered or in a central longitudinal series. Chin yellow to upper margins of the upper labials, which, with that of the rostral, are black. New England to Mississippi.

var. ARNYI.

DIADOPHIS ARNYI *Kennicott*, 1859, *Pr. Ac. N. Sc., Phil.*, 99.

Abdomen more spotted with black, ventrals 160. Subcaudals 50 pairs. Kansas.

var. DOCILIS.

Baird & Girard, 1853, *Cat. N. A. Serp.*, 114.

Body above uniform ash-gray; yellowish white beneath, spotted with black. A proportionally broad yellowish white occipital ring, margined with a narrow black line. Dorsal scales in 15 rows. Ventrals 193. Anal entire. Subcaudals 57 pairs. (From descr.) Rio San Pedro of Rio Grande.

DIADOPHIS REGALIS.

Baird & Girard, 1853, *Cat. N. A. Serp.*, 115.

"Body above uniform greenish-ash; beneath light yellow, scattered all over with small black spots. No occipital ring. Dorsal scales in 17 rows. Ventrals 237+1+58 pairs." Sonora, Mexico.

A specimen of this species from San Luis Potosi has 210 ventrals. Anal bifid, and 73 pairs of subcaudals. The lower surface of the tail and hinder abdomen are a bright orange red, shading to yellow forward. Belly spotted irregularly with black. Labials and chin-shields with black spots on their hinder margins. Scales in the outer row dark with yellow bases, medials dark, finely sprinkled with ashy.

The three preceding species of *Diadophis* are very closely related. I am inclined to consider them as one, which, through several varieties, gradually increases in length, number of ventral plates and brilliancy of coloration from New England to Mexico.

RHINOCHEILUS.

Baird & Girard, 1853.

Body elongate, tapering little to head and tail, slightly compressed; head small, rather indistinct, narrow, crown convex, snout produced, pointed; tail short, tapering regularly. Maxillary teeth equal, smooth, without interspaces between anterior and posterior. Crown-shields nine. Rostral prominent, bent back on the top of the snout. Nasal in two parts, nostril between. Loreal present. Oculars 1—2. Scales smooth, short, broad, in 23 rows. Anal entire. Subcaudals entire or divided (the specimen before me has nineteen of the posterior divided).

RHINOCHEILUS LECONTEI.

Baird & Girard, 1853, *Cat. N. A. Serp.*, 120.

Long, slender, subcylindrical, belly flat; head rather indistinct from the neck, little larger, crown convex, narrow and pointed in front; tail short, near one eighth of the total, stout, tapering. Posterior upper maxillary teeth stouter. Mouth-cleft medium, slightly curved. Eye moderate, pupil subcircular (apparently a little oblong, erect). Rostral prominent, vertically compressed, so as to appear pointed in a side view, crowding backward between the oblique internasals. Nasal in two parts, nostril between. A loreal. Oculars 1—2. Temporals 2+3. Labials eight, fourth and fifth in orbit, seventh largest. Infralabials nine, fifth largest. Submentals one pair, followed by four small shields. Scales lozenge-shaped, smooth, flat, in 23 rows, outer broader. Ventrals broad, 191—206. Anal entire. Subcaudals 40—49 (on one specimen half of them are divided).

Black, red and yellow in life. In alcoholic specimens uniform yellowish white, with about thirty-three transverse black bands, separated by narrower spaces—26 to the vent. Each black band is composed of a narrow, elongate, subquadrangular spot on the middle of the back—about three scales long by five in width—and a wedge-shaped extension of black scales, with yellow spots, down each flank to the edge of the abdomen. On the outer two rows and the extremity of the ventrals on each side there is a series of irregular black spots, twice as many as there are of the bands. The spaces between the black bands were red. Each scale has a black spot in the center. Head black from frontal to neck. On each side of this the scales are black, with light centers. Upper labials margined with black. Muzzle yellowish.

The pattern of coloration is about as below. A dorsal series of elongate black spots—about 26 to the vent—separated by spaces equal or smaller, a series of twice as many small black spots on the flank—placed opposite the extremities of the former—and a third series on the edge of flank and abdomen alternating with the series above it. The increase of the amount of black on the scales tends to form bands and obliterate the original pattern. Southern California to Mexico.

var. TESSELLATUS.

Labials eight. Infralabials ten. Ventrals 178. Subcaudals 37 entire, plus 14 pairs. Coahuila, Mexico.

Heterodon.

Beauvois, 1799; *Latreille*, 1800, *Hist. Rep.*, *IV*, 32.

Of moderate size. Body stout, belly flat. Head short, broad, little larger than the neck. Snout very prominent, shovel-shaped. Rostral a produced trihedral. Posterior maxillary teeth larger, separated from the others by an interspace. Head, neck, and body very distensible. Tail short, pointed. Scales keeled or smooth. Subcaudals bifid. United States to the Argentine Republic.

Azygos shield in contact with the prefrontals	*platyrhinus.*
Azygos surrounded by small plates	*simus.*

HETERODON PLATYRHINUS, *pl. VI., fig.* 5.

Latreille, 1802, *Hist. Nat. Rept., IV,* 32, *pl. XXVIII, fig.* 1–3.

Stout, tapering backward, body, neck and head very distensible; head broad, short, slightly convex on the crown; tail short, near one sixth of the total, tapering. Eye large, surrounded on sides and below by small scales, pupil round. Mouth-cleft moderate, forming a single curve with the anterior face of the rostral. Posterior maxillary teeth larger, smooth, separated by an interspace from the others. Crown-shields broad. Supraciliaries large. An azygos shield behind the rostral, in contact with the internasals. Internasals subtriangular, separated by the rostral and azygos. Rostral very prominent, curving upward into an acute-edged trihedral or shovel, with a sharp ridge between the internasals. Nasal in two parts, the valvular nostril between. Loreals two, lower larger. Oculars ten (9—14). Temporals varying, three to four. Labials eight, sixth and seventh large. Infralabials eleven, third and fourth large. Submentals one pair, followed by small shields, in contact with three labials. Scales keeled, broad at the extremity, in twenty-five rows (23—25), dorsal narrow, caudal and outer row broad, first row smooth. Ventrals 120—150. Anal bifid. Subcaudals 45—60 pairs.

Reddish or yellowish-brown to black (var. niger). A series of twenty to thirty dorsal spots, usually surrounded by a margin of very light color. Tail with about nine transverse bands. On the upper portion of the flank there is a series of medium-sized spots alternating with the dorsal; below this there are three or four alternating series of small more or less indistinct spots, the lower encroaching upon the ventral scales. Yellow under the chin and throat, darkening posteriorly and becoming olivaceous mottled or blotched with brown. A dark light-edged band across the prefrontals through the eye to the angle of the mouth. A similar band on the frontal and supraciliaries just behind the eye, more or less joined with the broad band from each parietal to the sides of the neck. Immediately behind the head, between the bands from the occiput, which spread around it, there is a median short longitudinal band of half their length. Mississippi Valley to the Atlantic.

var. NIGER.

SCYTALE NIGER *Daudin*, 1803, *Hist. Rept.*, *V*, 342.
HETERODON PLATYRHINOS, var. NIGER, *Jan.*, 1863, *Elenc. Sist.*

Dark brown or olivaceous to uniform black.

H. catesbyi of Dr. Günther is not separated from *H. nasicus* by the description. Southeastern States.

HETERODON SIMUS, *pl. VI.*, *fig.* 4.

COLUBER SIMUS *Linné*, 1766, *Syst. Nat.*, *ed. XII*, 375.
HETERODON SIMUS *Holbrook*, 1842, *N. A. Herp. IV*, 57, *pl. XV.*

Stout, tapering backward, belly flat, body, neck, and head very distensible. Head broad, short, slightly convex on the crown; tail short, near one sixth of the total, thick, tapering. Eye large, pupil round. Mouth-cleft moderate, forming with the face of the rostral a continuous curve. Posterior maxillary teeth isolated, larger, smooth. Crown-shields broad. Parietals, frontal, and prefrontals frequently cut into smaller plates. Supraciliaries broad. Azygos shield (behind the rostral) surrounded, and the internasals separated from the rostral, by small plates. Rostral broad, very prominent, produced obliquely upward and expanded into an acute-edged spade-shaped trihedral, sharp-ridged on the top of the snout. Nasal in two parts, sometimes three; nostril valvular. Loreals two, upper smaller. Oculars 10—13. Temporals 4+5, varying much. Labials eight, sixth and seventh large. Infralabials ten (9—11), fourth largest, four in contact with the submentals. Submentals one pair, short. Scales keeled in 25 (23—27) rows, medial narrow, lateral and caudal broad and rounded. The outer row is keeled in some, smooth in others, and in cases the keels are very indistinct on two or three rows above it.

Yellowish-brown to brownish-yellow. Pattern of coloration similar to that of *H. platyrhinus*, with a dorsal series (30—50) of large blotches; alternating with this on the upper part of the flank a series hardly half as large; below the latter, on the side, are three or four alternating series—more or less irregular and confluent—of small spots, the lower being upon the ends of the ventrals. Belly yellow, more or less clouded with brown, to more black than yellow. Chin and throat yellowish. Tail generally lighter below. A brown band across the prefrontals through the eye to the angle of the mouth; a similar band behind the eye on the frontal and supraciliaries, separated from the former by a narrow band of light color. A broader band of brown from each parietal backward to the neck, and between them on the median line of head and neck a short longitudinal bar. Mississippi Valley to the Atlantic.

var. NASICUS, *pl. VI, fig.* 6.

HETERODON NASICUS *Baird & Girard,* 1853, *Cat. N. A. Serp., pp.* 61, 157.

Rostral more produced and bent; prefrontals more dissected; head bands shorter and broader; belly with large quadrate blotches of dark color to nearly uniform black. Scales in 23 rows. Ventrals 135—150. Anal bifid. Subcaudals 34—50. Arkansas, Texas, New Mexico, California.

var. KENNERLYI.

HETERODON KENNERLYI *Kennicott,* 1860, *Pr. Ac. N. Sc., Phil.,* 336.

Head broad, short anteriorly.

Pattern of colors as in *simus,* spots smaller, more numerous, dorsal sometimes divided into two alternating series a portion of the length. Belly black, irregularly spotted with white. Oculars, loreal, internasals, azygos, prefrontals, and sometimes the frontal, more or less cut into small plates. In a specimen before me there are 21 plates in front of supraciliaries and frontal on the top of the head. Scales in 23 rows, outer broader, smooth, balance keeled. Ventrals 148. Anal bifid. Subcaudals 35 pairs. Mexico.

CEMOPHORA.

Cope, 1860.

Body elongate, subcylindrical; head rather indistinct; tail short, conical. Eye small, pupil round. Posterior maxillary teeth longer, smooth. Rostral swollen, not keeled. Nasal in two parts, nostril between. Loreal rarely absent. Scales smooth, in 17—19 rows. Anal entire. Subcaudals in two rows.

CEMOPHORA COCCINEA, *pl. VI, fig.* 1.

COLUBER COCCINEUS *Blum.*, 1788, *Licht. & Voigt.*, *Mag.*, *V.*

Rather small. Long, slender, subcylindrical; head little larger than the neck, subconical, snout turned upward, with prominent rostral, but not compressed into a sharp edge as in *Heterodon.* Tail short, near one seventh of the total, tapering to a point. Eyes small, pupil round. Mouth-cleft not very deep, somewhat curved. Posterior maxillary teeth larger. Crown-shields normal. Frontal broad, hexagonal. Supraciliaries very small. Prefrontals broader than long. Rostral swollen, extending back between the internasals. Nasal entire, sometimes grooved or half divided, occasionally divided. A small loreal. Oculars 1—2, lower smaller. Temporals 1+2. Labials six, second commonly entering the orbit, third beneath the eye and postorbitals. (A specimen shows fusion of the second and third on one side, and the second, third, and fourth on the other.) Infralabials eight, fourth largest. Submentals one pair. Scales smooth, in 19 rows; dorsal lozenge-shaped, pointed, outer little broader. Ventrals broad, 157—174. Anal entire. Subcaudals 34—45 pairs.

Crimson in life, yellowish in alcohol; white below. Crossed by pairs of transverse bands of dark brown or black, each pair inclosing a narrow band of yellow. Sixteen to nineteen yellow bands on the body, four to five on the tail; they are limited on the outer rows by a series of spots of dark, which alternate with the dark bands. Black rings about equal to yellow, two or three scales. The red space between the black rings has a width about equal to that occupied by the pair and the included yellow. The red spaces are more or less completely inclosed by the union of the black bands beneath them into a ring. The first black band crosses the head, behind the eye, to the angle of the mouth; in front of this the head is red, yellowish on the snout, behind it on the occiput the first yellow band is followed by the second black. Southern States east of the Mississippi.

var. COPEI.

The specimen described and figured by Prof. Jan under this name has the red blotches on the back much shorter and more numerous than is usual in the species. It had thirty-two black rings on body and tail. The loreal enters the orbit below the anteorbital. Tennessee.

XENODON.

Boie, 1827.

Stout, subcylindrical, belly flat; head distinct from the neck, short, broad, crown flat; tail short, stout, tapering. Posterior maxillary teeth larger, smooth. Eye large. Crown-shields nine. A loreal. Rostral moderate, reaching the top of the snout. Nasal divided. Scales smooth, in oblique series, much imbricate. Anal entire or divided. Subcaudals in two rows. Brazil to Mexico; East Indies.

XENODON BERTHOLDI.

Jan, 1863, *Arch. per la Zool. II, fasc. II*, 108.

Stout, belly broad; head large, broad, crown flattened; tail short, tapering. Eye moderate, pupil round. Posterior maxillary tooth long, smooth. Crown-shields nine, short, broad. Prefrontals bent down to the loreal. Frontal broad, concave or truncate in front. Parietals as broad as long. Nasal in two parts, nostril between. Loreal small. One anteocular, short, high. Postoculars two or three, varying much in size and shape in different individuals. A large temporal in contact with the oculars. Labials eight, fourth and fifth in orbit, seventh largest. Infralabials eleven, sixth largest. Submentals two pairs, anterior larger. Scales smooth, lustrous, in 19 rows, lateral very oblique, much imbricate. Ventrals 149. Anal entire. Subcaudals 47 pairs (42—47).

Brownish, with twelve to fourteen dark light-edged transverse bands, which widen and bifurcate on the flanks, thus inclosing on the middle of the back a light space, somewhat of a lozenge-shape, which frequently has a darker patch in its center. Lower part of flank spotted with dark. Abdomen yellowish to olive, mottled with darker. This species resembles *X. rhabdocephalus* very much; the most prominent difference is in the entire anal shield. Closely allied to *X. colubrinus* Gthr. Mexico.

HYPSIGLENA.

Cope, 1860, *Pr. Ac. N. Sc., Phil.*, 246.

Cylindrical; head distinct from the neck, depressed, broad posteriorly, conic anteriorly; tail short, less than one fourth of the total. Upper posterior maxillary tooth longer, smooth, separated by an interspace. Pupil elliptic, erect. Crown-shields normal. Nasal divided. A loreal. Oculars 2—2. Scales smooth. Anal bifid. Subcaudals in two rows. Arizona; Lower California.

HYPSIGLENA OCHRORHYNCHA.

Cope, 1860, *Pr. Ac. N. Sc., Phil.*, 246.

Elongate, subcylindrical, tapering little; head distinct from the neck, short, subconical, crown flattened, snout prominent; tail short, near one sixth of the total, tapering. Eyes small, pupil vertical. Post maxillary teeth longer, smooth, isolated. Nasal in two parts, nostril between. A loreal. Oculars 2—2. Temporals 1+2+3. Labials eight, fourth and fifth in orbit, sixth and seventh largest. Infralabials nine or ten, fifth or sixth largest. Submentals two pairs, posterior smaller. Scales smooth, in 21 rows, outer as broad as long. Ventrals 167. Anal bifid. Subcaudals 48 pairs.

Scales of body and head minutely punctulate with brown, giving a light brown or greyish appearance. With four series of alternating brown spots on each side, about 33 to vent. The two dorsal rows are the larger, and alternate or unite. The spots decrease in size down the flank; the lower are obsolescent. Belly light, immaculate. Head light; a brown band from the eye above the angle of the mouth to the neck, spreading posteriorly. Cape St. Lucas; Arizona.

CALAMARINAE.

Body cylindrical, stout to elongate; head seldom larger than the neck, comparatively short. Eye small to medium, pupil round. Usually some of the head-shields united. One anteorbital, sometimes united with the loreal. Not more than two postorbitals. Scales smooth or keeled, in 13 to 19 rows. Teeth equal and smooth, or the posterior maxillary larger and grooved or smooth.

One preocular; loreal sometimes fused with other shields;
nasal usually grooved; loreal rarely present; rostral produced;
anal bifid; scales smooth, in 17 rows — Ficimia.
nasal entire; scales smooth, in 19 rows;
anal entire; loreal present — Cheilorhina.
nasal divided; scales smooth, in 17 rows; no loreal;
anal bifid — Stenorhina.
nasal divided; no loreal; scales smooth, in 15 rows;
anal divided or entire — Tantilla.
nasal entire; loreal rarely present; scales smooth, in 15 rows;
anal entire or divided; post maxillary teeth larger, grooved — Elapomorphus.
nasal entire or divided; scales smooth or keeled, in 15 rows;
anal bifid — Contia.
Loreal and preocular united;
nasal divided; scales keeled;
anal entire — Ninia.
nasal divided; prefrontal entering the orbit;
anal bifid; scales smooth or keeled — Virginia.
nasal entire; rostral produced; scales smooth;
anal bifid — Carphophis.
nasal divided; scales smooth;
anal entire — Geophis.

Ficimia.

Gray.

Moderately stout, subcylindrical; head moderate, slightly depressed; tail short to medium. Teeth small, equal, smooth. Eyes small to medium, pupil round, subcircular in *variegata*. Head-shields seven to nine, short, broad; prefrontals and internasals often united. Rostral large, prominent, produced backward between the internasals or prefrontals, convex, sometimes resembling that of *Heterodon*. Nasal usually entire and grooved behind the nostril, sometimes divided or without the groove. Oculars 1—2. Scales smooth, broad, in 17 rows. Anal divided. Subcaudals in two rows. (Anterior labials, rostral, and nasal sometimes united.)

Internasals and prefrontals not united;
rostral separating internasals but slightly;
prefrontal and labials in contact *frontalis.*
rostral separating internasals, but not reaching frontal *cana.*
Internasals and prefrontals united;
nasal and anteorbital in contact *nasus.*
rostral not reaching the frontal;
loreal generally distinct *maculata.*
rostral reaching the frontal;
loreals fused with prefrontals;
back with black cross bars *variegata.*
back blackish-olive *olivacea.*

FICIMIA FRONTALIS.

TOLUCA FRONTALIS *Cope*, 1864, *Pr. Ac. N. Sc., Phil.*, 167.

Muzzle prominent, pointed, slightly narrowed. Prefrontals slightly separated by the rostral. Nasal long. Frontals in contact with labials. Preocular low, narrow. Two postoculars, lower barely in contact with one temporal. Seven upper labials; eye over third and fourth; seven lower. Parietals longer than frontal. Anterior suture of frontal a little longer than straight lateral. Scales in 17 rows, equal, thin. One pair of short submentals. Ventrals 144. Anal bifid. Subcaudals 44 pairs. Total length $10\frac{8}{12}$ inches; tail, $1\frac{10}{12}$ inches.

Greyish-brown, more rufous medially, with about thirty-six rhombic dark-edged spots of brown, six scales wide and four long, the angles of which are produced as vertical lateral bars. Spots becoming similar to cross-bands posteriorly, separated by a pale spot on the vertebral line. A brown cross-band across prefrontals and frontals; a longitudinal band on each occipital and side of nape. (Cope.) From Colima, Mexico. A doubtful species.

FICIMIA CANA.

GYALOPION CANUM *Cope*, 1860, *Pr. Ac. N. Sc., Phil.*, 243.

"Form stout; tail one eighth of total length. Head slightly distinct, large, depressed. Rostral plate acute; its anterior border elevated; its upper surface concave. It is produced backwards, separating the prefrontals, not reaching the vertical. Frontals two pairs. Nasal confounded with the first labial, a groove from the nostril to the suture of the second labial. No loreal; its place supplied by the post frontal. One pre two post oculars. Scales smooth; anal and subcaudal scutellae divided. Teeth small, of equal lengths. Pupil round."

Internasals small, triangular. Anterior border of frontal not angulated. Labials seven, third and fourth in orbit. Infralabials seven, fourth largest. Submentals short. Scales broad, in 17 rows. Ventrals 130. Subcaudals 28 pairs. Total length 7½ inches, tail 11 lines.

Back brownish-grey, with irregular transverse bands of brown (thirty-one in specimen described), which extend to the ventrals, and anteriorly exhibit a tendency to divide in three series of spots. Eight spots on tail. First spot on neck large. A brown band from one angle of the mouth to the other, another through the eye across the frontals. Dirty yellowish beneath, including the first row of scales. Arizona.

FICIMIA NASUS.

CONOPSIS NASUS *Günther*, 1858, *Cat. Col. Snakes, p.* 6.

Body cylindrical; head not distinct from neck, rounded, conical, sharply pointed in front; tail stout, tapering. Eye moderate, pupil round. Mouth moderate. Teeth equal, smooth. Upper jaw much the longer. Rostral a protruding four-sided pyramid, with rounded edges, resembling *Rhinostoma*, but without sharp ridge. Frontals and internasals fused, bent on the sides. Frontal very large, longer than broad, six-sided. Supraciliaries elongate. Nasal entire, in direct contact with the anteorbital. No loreal. One anteocular, not raised on the crown. Postoculars two. Labials seven, third and fourth in orbit. Temporal one, large, elongate. Submentals two pairs, anterior larger. Scales smooth, short, rounded at the tip, in 17 rows. Ventrals 118. Anal bifid. Subcaudals 38 pairs.

Nearly uniform dark olive, anteriorly some obsolete black spots; sides lighter; belly yellowish-white, edges of each ventral plate with two or three black spots. Total length 10 inches; tail 2 inches. (Günther.) California.

FICIMIA MACULATA.

OXYRHINA MACULATA *Jan*, 1862, *Prodr. Icon. Gén. Ofid., pt. II*, 61.

Subcylindrical; head not distinct from neck, subconical, slightly depressed, muzzle produced. Snout long, rostral conical. Eye moderate, pupil round. Mouth-cleft deep, curved. Prefrontals and internasals united. Frontal broader forward, hexangular. Nasal entire. A loreal, sometimes absent. One anteorbital. Postorbitals 1 to 2. Temporals 1+2. Labials 6 to 7, the two preceding the last more or less wedged. Infralabials 6 to 7, fourth large, anterior four in contact with the submentals. Two pairs submentals, anterior larger. Scales smooth, short, broad, in 17 rows. Ventrals 125—131. Anal bifid. Subcaudals 28 to 36 pairs.

Brownish, more or less punctulate, with a dorsal series of irregular spots, the anterior of which are somewhat elongate. Flanks marked with brown, as if the dorsal spots had continued downward and broken up. Belly light, with spots of dark irregularly placed in a series on each side. (Jan.) Mexico.

FICIMIA VARIEGATA.

AMBLYMETOPON VARIEGATUM *Günther*, 1858, *Cat. Col. Snakes*, 7.

Moderate; head not distinct, rounded, muzzle not elongate; tail rather short, tapering. Eye moderate, pupil sub-elliptical. Rostral bent upward, with a convex ridge, not tapering behind, separating the prefrontals. Internasals and prefrontals united. Frontal large, seven-sided. Oculars 1—2. No loreal. Labials seven, third and fourth in orbit. Anterior temporal elongate. Scales smooth, nearly square, in 17 rows. Ventrals 151. Anal bifid. Subcaudals 37 pairs.

Back reddish-white, with 56 black narrow cross-bars, two on the neck larger than the remainder. Head with symmetrical black markings. Sides black spotted. Belly uniform whitish. (Günther.) Mexico.

FICIMIA OLIVACEA.

Gray, 1849, *Cat. Snakes Brit. Mus.*, 80.

Head moderate, rather depressed; body subcylindrical; tail tapering. Rostral large. Internasals and prefrontals fused, separated by the rostral. Loreal and prefrontals united. Supraciliary small, triangular. Frontal and parietals large. Nasal triangular, grooved behind the nostril. Eyes small, pupil round. Scales smooth, lustrous, broad, rounded at the tip.

Blackish-olive; lips, chin, and beneath pale yellowish. (Gray.) Mexico.

CHEILORHINA.

Shape and general appearance that of *Elapomorphus*, from which it is distinguished by the greater number of rows of scales, and by the smooth teeth, which gradually increase in size backward.

CHEILORHINA VILLARSII.

(*De Fil.*) *Jan*, 1862, *Prodr. Icon. Ophid.*, *pp.* 55 *and* 57; *Icon. Livr.*, 48, *pl. I, fig.* 5.

Head not distinct from the neck; tail short, thick, blunt; snout prominent, broad, rounded. Internasals united with the prefrontals. Frontal hexangular, anterior angle produced. Supraciliaries short, broad. Nasals entire, united with the anterior labials. Loreal present. Preocular one. One postocular. One temporal, in contact with the ocular. Five labials, including that united with the nasal, third below eye and orbitals. Infralabials six. Submentals one pair. Scales broad, smooth, in 19 rows. Ventrals 213. Anal entire. Subcaudals 15 pairs.

Crown, labials, and infralabials black to the temporals. With transverse rings of black, more or less incomplete below, separated by spaces of about half their width. The first black ring crosses the neck, and occupies about seven scales. Two rings surround the tail; all grow narrower on the flank. Western Mexico.

STENORHINA.

Duméril & Bibron, 1854, *Erp. Gén. VII*, 865.

Moderate, subcylindrical, belly flattened; head little larger than the neck, depressed, narrow forward; tail short, stout, conical. Eye small to moderate, pupil round. Posterior maxillary teeth a little longer, grooved. Internasals and nasals usually fused. Nasals divided. No loreal. Scales smooth, in 17 rows. Generally one ante and two post oculars. Anal bifid. Subcaudals in two rows. Mexico to Central America.

Uniform brownish or slightly blotched;	
bases of scales darker	*fremenvillei.*
with longitudinal bands of darker,	*quinquelineatus.*

STENORHINA FREMENVILLEI.

Duméril & Bibron, 1854, *Erp. Gén. VII*, 868.

Cylindrical, belly broad, tapering slightly to neck and tail; head moderate, little, if any, larger than the neck, depressed, crown flattened, slightly arched in front of the eye; tail short, stout, conical. Eye small, pupil round. Internasal of each side united with the anterior portion of the nasal. Rostral broad, low, blunt-angled between the internasals. Prefrontals broad, in contact with the posterior portion of the second labials. Frontal hexangular, broader forward, hinder angle more acute. Parietals short, broad. No loreal. One anteorbital, beneath the supraciliary, not in contact with the nasal. Two post orbitals, lower small. Temporals 1+2. Labials seven, third and fourth in orbit, fourth to sixth large, and nearly equal in size. Infralabials seven, second smallest, fifth largest. Submentals two pairs, posterior small. Scales smooth, broad, rounded at apex, lateral as broad or broader than long. Ventrals 171—175 (165—175). Anal bifid. Subcaudals 35—40 pairs (35—43).

Light yellowish, to dark olivaceous, brown, base and sides of each scale darker. Belly yellowish to olivaceous, mottled with olive, bases of ventrals darker. Throat, chin, and lips lighter to white or yellow. Central America.

STENORHINA QUINQUELINEATA.

MICROPHIS QUINQUELINEATUS *Hallowell*, 1854, *Pr. Ac. N. Sc., Phil.*, 97.

"Head of moderate size, short, depressed in the middle, covered with nine plates; snout rounded; nostrils between the nasal and anterior frontal plates; a frenal; one ante ocular; two post oculars; seven superior labials, eye over third and fourth; eyes of moderate size, pupil round; supraciliary plate not projecting over the eye; tail of moderate length. . . . . . Head, body, and tail above ash color; five dark blue stripes extending from the occiput to the base of the tail, the three intermediate ones broader than the lateral; the other stripes prolonged upon the tail, the middle one to near its extremity; 17 rows of smooth quadrangular scales; 170 abdominal scuta; two bifid preabdom; 33 subcaudal." Honduras.

TANTILLA.

Baird & Girard, 1853, *Cat. N. A. Serp.*, 131.

Body slender, subcylindrical; head indistinct, depressed; tail rather short, tapering. Eye small, pupil round. Nine head-shields. Nasal divided, nostril in anterior part, sometimes entire. No loreal. Orbitals 1—1 to 2. Scales smooth, lustrous, in 15 rows. Anal divided or entire. Subcaudals in two rows.

No band across the occiput;	
oculars 1—1; labials six	*gracilis.*
with three longitudinal bands of darker color	var. *calamarina.*
oculars 1—2; labials seven;	
head black	*nigriceps.*
an occipital band;	
oculars 1—2; labials seven	*coronata.*
a black spot on the occiput;	
oculars 1—1	*planiceps.*

TANTILLA GRACILIS, *pl. VI., fig.* 3.

Baird & Girard, 1853, *Cat. N. A. Serp.*, 132.

Small, wormlike, slender, slightly depressed; head small, not distinct from neck, depressed, crown convex; tail short, slender, tapering to a point. Eye small, over third and fourth labials, pupil round. Mouth-cleft deep, nearly straight. Snout broad, very prominent. Head-shields nine, broad. Frontal hexagonal, or rounded in front. Rostral broad, subtriangular, convex. No loreal. Nasal in two parts, nostril in anterior. Orbitals 1—1. Temporals 1+1. Labials six, posterior two larger, the temporals wedging between them. Infralabials six, fourth larger, anterior pair slightly separated by the submentals in the specimen described. Submentals two pairs, posterior smaller. Scales smooth, in 15 rows, dorsal lozenge-shaped, outer and caudals somewhat broader. Ventrals 124—129. Anal bifid. Subcaudals 41—45 pairs.

Light reddish or olivaceous-brown, head darker. Beneath much lighter, yellowish. Posterior labials white; the white extending upward to the middle of the temporal. Individuals vary in regard to contact of mentals and submentals. Texas.

var. CALAMARINA.

Cope, 1866, *Pr. Ac. N. Sc., Phil.*, 320.

Head flat, not distinct from neck; tail near one sixth of total length. Head-shields nine. Internasals narrow. Prefrontals in contact with second labial. Frontal longer than broad, angled in front. Supraciliaries small. Nasal large. Orbitals 1—1, small. No loreal. Labials six, third and fourth in orbit, and supporting the orbitals. Infralabials seven, fourth largest, the anterior widely separated from each other by contact of mental and submentals. Anterior submentals longer than broad, posterior minute. Total length $7\frac{7}{12}$ inches; tail $1\frac{1}{12}$ inches.

Brown, end of muzzle yellow, lower surfaces and occipital region pale. Sides and top of head and three longitudinal bands blackish; the latter extend on to the common line of the third and fourth, and on the vertebral series of scales. Guadalaxara, Mexico. (Cope.)

TANTILLA NIGRICEPS.

Kennicott, 1860, *Pr. Ac. N. Sc., Phil.*, 328.

More slender than *T. gracilis*, head narrower. Frontal more elongate posteriorly, parietals narrower. Orbitals 1—2. Labials seven.

Uniform brownish white (in Alc.), light below. Crown as far as the parietals deep black; no indication of a post-occipital black ring as in *T. coronata*. (Kennicott.) Texas and New Mexico.

TANTILLA CORONATA.

Baird & Girard, 1853, *Cat. N. Amer. Serp.*, 131.

Small, worm-like, slender, slightly depressed; head small, indistinct, depressed, crown convex; tail short, slender, tapering to a point. Head-shields nine, broad. Prefrontals short. Frontal hexangular, broad anteriorly. Parietals long, much separated in front by the frontal. Snout broad, prominent. Rostral broad, bent back on the snout. Nasal divided, nostril in anterior portion. No loreal. Orbitals 1—2. Eye small, over the third and fourth labials, pupil round. Labials seven, posterior largest. Infralabials six (6—7), fourth largest. Posterior pair of submentals much shorter. Temporals 1+1. Scales smooth, subrhomboidal, in 15 rows, outer broader. Ventrals 144. Anal bifid, rarely entire. Subcaudals 40 pairs.

Reddish-brown, head darker. A band of black from one half to six scales wide across the neck on the dorsal rows, sometimes absent. A narrow band of light color, a scale or two in width, crosses the occiput on the extremities of the parietals. Frequently a light spot on the fifth labial, reaching toward the eye. Infralabials more or less black. Belly and throat uniform whitish. South Carolina to Mississippi.

T. wagneri (Jan), from Florida; has an entire anal-shield.

TANTILLA PLANICEPS.

COLUBER PLANICEPS *Blainville*, 1835, *Nouv. Ann. du Musée, p.* 294, *pl.* 27, *f.* 3—3*b.*

TANTILLA PLANICEPS *Cope*, 1875, *Check list, p.* 35.

Slender, elongate, cylindrical, head small, depressed, little larger than the neck; snout short; tail short, pointed. Nostril lateral, in the middle of the elongate nasal. Eyes medium. Mouth broad, deeply cleft. Head-shields nine. No loreal. Orbitals 1—1. Ventrals 134. Subcaudals 56 pairs. Scales broad, lustrous, smooth.

Uniform russet (light reddish-brown) above, whitish below, with a black spot on the occiput and commencement of the neck.

Duméril & Bibron say the nasals are divided by a suture below the nostril. Erp. Gén. VII, 858. (From descr.) California.

ELAPOMORPHUS.

(*Wiegmann*) *Fitzinger*, 1843, *Syst. Rept.*, 25.

Form resembling that of *Elaps*. Long, cylindrical; head rather indistinct from the neck; crown convex; tail short, thick, conical. Eyes small, pupil round. Muzzle broad, rounded. Posterior upper maxillary teeth generally somewhat larger and grooved. Nasal entire, rarely bifid. Loreal exceptionally present. Internasals two, or fused with prefrontals, or each other. Prefrontals two, sometimes united. Preocular one. One postocular, sometimes two. Scales smooth, in 15 rows. Anal entire or divided. Subcaudals in two rows.

ELAPOMORPHUS MEXICANUS.

Günther, 1862, *Ann. & Mag. Nat. Hist.*

Moderately slender; tail near one fourth of total. Internasals small, short, broad. Prefrontals short, broad. Frontal six-sided, anterior a little greater than a right-angle. Oculars 1—2, anterior not in contact with the frontal. Labials seven, third and fourth in orbit, seventh largest. Anterior temporal large. Submentals two pairs, anterior rather larger. Scales smooth, in 15 rows. Ventrals 158. Anal bifid. Subcaudals 52.

Brownish olive, with three blackish longitudinal bands, viz: one, almost linear, along the vertebral series of scales; the two others along the sides, each composed of two blackish, one line running along the middle of the second outer series, the other along that of the third. Neck with a pair of small yellowish spots; front part of the snout crossed by a yellowish band; a black spot on the lips below the eye; uniform yellowish below. (From descr.) Mexico.

CONTIA.

Baird & Girard, 1853.

Moderately elongate, sub-depressed; head little larger than the neck, depressed; tail short, tapering to a point. Eyes small, pupil round. Crown-shields normal. Muzzle protruding. Rostral convex, broad. Nasal entire or divided. A loreal, sometimes united with other shields. One anteorbital. Generally two postorbitals, sometimes one or three. Temporals commonly 1+2. Labials seven (5—7). Infralabials seven (6—8). Scales smooth, rarely keeled, in 15 series. Anal bifid. Subcaudals in two rows.

(*Sonora.*)

- Colors in transverse bands;
  - ventrals 149; bands 31 *semiannulata.*
  - ventrals 158; bands 41 *occipitalis.*
  - ventrals 158—167; bands 31 *isozona.*
    - scales keeled on the tail *aemula.*

(*Contia.*)

- Colors not in transverse bands;
  - oculars 1—2;
    - labials eight; nasal grooved;
      - scales slightly keeled at the tail *pygaea.*
    - labials seven; flank with longitudinal band;
      - scales smooth;
        - entrals about 161, with black bases *mitis.*
        - ventrals about 145 *episcopus.*

CONTIA SEMIANNULATA.

SONORA SEMIANNULATA *Baird & Girard*, 1853, *Cat. N. A. Serp.*, 117.

Body subcylindrical, moderate; head not very distinct from neck, narrower on the snout, muzzle produced, elongated; tail short, about one fifth of total, tapering. Eye moderate, pupil round. Head-shields nine. Frontal narrow anteriorly. Rostral large. Internasals one third smaller than prefrontals. Nasal divided Loreal elongated, angular, horizontal. Orbitals 1—3. Posterior 2—3. Temporals 1+2. Labials seven, nearly equal, first and last smallest. Infralabials eight (7—8), fourth largest. Scales smooth, broad, in 15 rows, outer broader. Ventrals 149. Anal bifid. Subcaudals 39 pairs.

Body crossed with transverse jet black bars, 25 from head to anus, extending between and involving the exterior rows, becoming narrower on the flanks; along the back three to four scales long. Space between the bars above orange red, one scale wider than the black bars; on the sides greenish, with the base of the scales blackish. On the tail six black rings, continuing all around, covering two to eight scales; intermediate space red orange, four to five scales wide. Beneath uniform dull green, the black bars of the body not touching the scutellae. (From descr.) Sonora.

CONTIA OCCIPITALIS.

RHINOSTOMA OCCIPITALE *Hallowell*, 1854, *Pr. Ac. N. Sc., Phil.*, 95.

"Teeth of equal length, posterior ones not channeled; head depressed, eyes small; a rostral, two anterior and two posterior frontals; one anterior and two posterior oculars; a ventical; two occipitals; a small frenal; nostrils in a single plate; seven superior labials, the eye resting on the third and fourth. Abdominals 158; subcaudals 34.

"Milk white above, with 41 transverse black bands, including seven upon tail and one upon posterior part of head; six complete rings upon tail; throat and abdomen white, with transverse bands continuous with those upon back of tail; 15 rows of smooth quadrangular scales." Mohave Desert.

It is possible that this species and *C. isozona* will yet be united with *C. semiannulata*.

var. ANNULATA.

Completely encircled by black rings. Colorado Desert.

CONTIA ISOZONA.

Cope, 1866, *Proc. Ac. N. Sc., Phil.*, 304.

Tail four and two fifths times in the total length. Eye small, diameter twice in length of muzzle. Orbitals 1—2. Rostral rounded, slightly produced backward. Prefrontals and internasals much broader than long. Loreal twice as long as high. Labials seven, all higher than long. Eye over third and fourth. Scales in 15 rows, all broader than long. Ventrals 158—167. Anal divided. Subcaudals 52 pairs.

Twenty black half rings, separated by equal spaces of pinkish ground color. Belly immaculate. Tail completely six-annulate. The second specimen was vermillion between the bars and on top of the head. Probably a variety of *C. semiannulata*. (From descr.) Utah.

(*Procinura.*)

CONTIA AEMULA.

PROCINURA AEMULA *Cope*, 1879, *Pr. Ac. N. Sc., Phil.*, 262.

Post maxillary teeth longer, smooth, not isolated. Subcylindrical (elapomorph); head flattened on crown, muzzle projecting, rounded; tail short, near one sixth of total, covered with roughly keeled scales. Head-shields nine. Rostral obtuse-angled on top of snout. Prefrontals wider than long. Frontal wide, sending a long angle backward. Parietals short, wide. Nasal in two parts, nostril between. Loreal quadrangular. Orbitals 1—2. Temporals 1+2. Labials seven, first longer than high, third and fourth in orbit. Infralabials eight, fourth largest. Submentals two pairs, posterior small. Scales broad, rounded, in 15 rows, outer broader, smooth on anterior portion of body, medial rows keeled a short distance in front of the vent, caudals all keeled. Ventrals 148. Subcaudals 41 pairs.

Colors similar to those of *Elaps fulvius*. Broad black rings surround the body; these are broadly bordered with yellow, and separated by red twice as wide as the yellow. Red scales with black centers. A black spot on the crown covers frontal, supraciliaries, and parietals. Total length 0^m, 364; tail 0^m, 061. (From descr.) Mexico.

(*Contia.*)

CONTIA PYGAEA, *pl. VII*, *fig.* 5.

Cope, 1871, *Proc. Ac. N. Sc., Phil.*, 223.

Small, moderately stout; head little broader than the neck, subconical, slightly depressed; tail short, near one sixth of the total length, distinct, tapering to a point. Eye moderately large, pupil round. Head-shields nine. Rostral broad, low. Internasals narrow in front. Nostril small, round, nearer the upper edge of the nasal, which is grooved to the anterior labial. Lower angle of the loreal produced toward the eye. One anteorbital, narrow below. Postorbitals two. Labials eight, third, fourth, and fifth touching the eye. Infralabials 9. One temporal in contact with the orbitals, sometimes divided. Scales keeled, roof-shaped, or smooth, in 17 rows, apparently subhexangular, medial narrow, outer wider than long. Ventrals 120—133. Anal bifid. Subcaudals 35—54 pairs.

Back uniform brown; in some young specimens each scale bears a light line, which has the effect of strong keels. Bases of the ventrals dark toward the flanks, more uniform yellow medially. The dark color of the ventrals along the outer row forms a zigzag longitudinal line. Largest specimen 6½ inches; tail one inch. North Carolina to Florida.

CONTIA MITIS.

Baird & Girard, 1853, *Cat. N. A. Serp.*, 110.

Elongate, depressed; head depressed, little larger than the neck; snout short, broad, rounded in front; tail short, rather thick, tapering gradually to a short distance from the tip, whence more abruptly to the spine-like point. Eyes small, over the third and fourth labials. Head-shields nine, anterior short, broad. Rostral broader than high. Nasal divided, often partly or entirely united. Loreal present, sometimes fused with the prefrontals. Orbitals 1—2, rarely 1—1. Temporals 1+2. Labials seven, sixth largest. Infralabials seven, fourth largest. Anterior submentals much the larger. Scales smooth, in 15 rows, outer broader. Ventrals 161. Anal divided. Subcaudals 33—39 pairs.

Light reddish-brown, punctulate with black. A yellowish line on each flank, on the fourth and fifth rows of scales. Bases of all the scales darker, more distinctly so on the third and fourth rows, which presents the appearance of a darker line continued forward to the nostrils, darkening on the sides of the head and neck. Base of each ventral broadly banded with black. The subcaudals are much lighter, which suggests the possible existence of a habit of carrying the tail raised from the ground. California.

CONTIA EPISCOPA, *pl. VI, fig.* 2.

LAMPROSOMA EPISCOPUM *Kennicott*, 1859, *Mex. Boundary Survey Rept., p.* 22, *pl. VIII, f.* 2.
CONTIA EPISCOPA *Cope*, 1875, *Check list*, 36.

Body stout, subcylindrical, tapering posteriorly; head not distinct from neck, short, depressed, crown flat; tail short, thick, conical. Eye moderate, pupil round. Nostril small, lateral. Nasal entire. Head-shields normal. Frontals short, broad. The upper angle of the rostral bent back between the internasals. Loreal small, sometimes united with the postfrontals. Orbitals 1—2. Labials seven, third and fourth in orbit. Infralabials seven, fourth largest. Temporals 1+2. Anterior submentals very large, posterior very small. Scales smooth, nearly square, in 15 rows, outer broader. Ventrals 145. Anal bifid. Subcaudals 45 pairs.

Uniform yellowish or greenish-brown, each scale with a lighter margin. Belly yellowish. Total length 8¾ inches; tail 1¾ inches. Texas.

NINIA.

Baird & Girard, 1853.

Moderately elongate; tail rather short. Eye small, pupil round. Teeth equal, smooth. Internasals and supraoculars small. Nasal divided. Loreal and anteorbital fused. Postorbitals two. Scales keeled, in 17—19 rows. Anal entire. Subcaudals bifid.

Prefrontals united	*liebmanni.*
tail short;	
labials seven; brownish-white to brown;	
a black collar	*sebae.*
labials six; brown to black;	
no collar	*sieboldi.*
tail long, slender;	
back black; belly white;	
a light collar	*diademata.*

NINIA LIEBMANNI.

CHERSODROMUS LIEBMANNI *Reinhardt*, 1860, *Vidensk, Meddel, Kjöbenh.*, 242.

Head little larger than the neck; muzzle broad. Habit similar to other species of this genus. Prefrontals united, entering orbit. Internasals separate. Nasal divided. Loreal and anteorbital united. Postorbitals and supraocular united. Frontal broad. Temporals 1+2. Labials seven, third and fourth in orbit. Infralabials eight, fifth largest. Scales keeled, in 17 rows. Ventrals 130. Subcaudals 42 pairs.

Brown, with a transverse band of light color across the parietals. Mexico.

NINIA SEBAE.

STREPTOPHORUS SEBAE *Dum. & Bibr.*, 1854, *Erp. Gén. VII*, 515.
NINIA SEBAE *Cope*, 1860, *Pr. Ac. N. Sc., Phil.*, 340 (*name*).

Of moderate size, subcylindrical, belly broad; head rather distinct from the neck, crown convex, muzzle broad and rounded; tail short, tapering, slender posteriorly. Eye small, pupil round. Head-shields nine. Rostral small. Internasals and supraoculars very small. Frontal short, broad. Prefrontals nearly as large as frontal, entering the orbit. Parietals large. Nasal in two parts, nostril between. Loreal large, fused with anteorbital. Postorbitals two, lower small. Temporals 1+2. Labials seven, third and fourth in orbit, the former extended backward to reach it. Infralabials seven, fourth large. Submentals two, anterior twice as large as posterior, not in contact with the mental. Scales keeled, in 17 or 19 rows, outer broad. Ventrals 146 to 151. Anal entire. Subcaudals 50 to 64 pairs.

Brownish white, scales tipped with dark. A row of small black spots on each side of the back. Head-shields black; labials more or less margined with the same color. Separated from the black of the head by about three scales there is a black collar on the neck, varying in length, extending to the outer rows of scales. Belly and labials glossy yellowish-white. Total length 11¾ inches; tail 2¼ inches. Mexico and Central America.

NINIA COLLARIS.

STREPTOPHORUS SEBAE var. COLLARIS *Jan.*, 1865, *Icon. Ophid. Livr.* 12, *pl. III, fig* 6.

Differs from *N. sebae* in that it has no spots behind the broad collar on the neck, and in the punctulations on the hinder part of the abdomen. A variety of *N. sebae*.

NINIA SIEBOLDI.

ELAPIODES SIEBOLDI *Jan.*, 1862, *Prodr. Icon. Gén. Ophid.*, *II*, 21.

Elongate, subcylindrical, belly flattened; head not distinct from neck, subconical, slightly depressed, narrowed in front; tail short, conical. Eye small, pupil round. Head-shields nine. Internasals very small. Prefrontals large. Frontal broader than long, supraciliaries much shorter. Rostral small, little broader than high. Nasal divided. Anteorbital and loreal fused. One postorbital. Labials six, third and fourth in orbit, fifth largest; in the specimen figured it is in contact with the parietal. Infralabials seven, fourth largest. A pair of submentals, followed by large shields. Scales lustrous, iridescent, carinate in the dorsal rows to the tail, in 17 series, outer broader and smooth. Ventrals 146—154. Anal entire. Subcaudals 34—38 pairs.

Dark brown to black. Belly and throat white. Subcaudals darker at the bases. Outer row of scales marked with lighter. Labials and infralabials little lighter than top of head. (Jan.) Mexico.

NINIA DIADEMATA.

Baird & Girard, 1853, *Cat. N. A. Serp.*, 49.

All the upper portion of the trunk deep black; with a white collar; all the ventrals black in their central portion and margined with white, forming thus two white lateral bands. Labials six, third and fourth in orbit. Rather more slender than other Niniae. Scales in 19 rows. Ventrals 145. Anal entire. Subcaudals 89 pairs.

The essential colors are the deep black and the pure white. Thus the under side of the head and the neck, which seems to be encircled by a collar, are of a beautiful white, as also the sides of the belly and tail where it forms a fine lateral band. The black covers the remainder of the body. The head is twice as long as wide. Total length 0^m, 347; tail 0^m, 067. Mexico. (B. & G.)

VIRGINIA.

Baird & Girard, 1853.

Rather small; body stout; belly broad; head distinct from the neck, subconical, depressed; tail short, thick, tapering to a point. Eye medium, pupil round. Crown-shields eight or nine. Internasals two or one. Nostril anterior, in the anterior portion of the divided nasal. Loreal and anteorbital united. Prefrontal entering the orbit. Postorbitals two. Anal and subcaudals bifid. Scales smooth or keeled, in 15 to 17 rows.

- Scales in 17 rows,
  - keeled;
    - labials five;
      - one internasal *striatula.*
      - two internasals *inornata.*
  - smooth or keeled;
    - labials six *elegans.*
- scales in 15 rows, smooth or keeled;
  - internasals two;
    - postorbitals two *valeriae.*
    - postorbitals three *harperti.*

Virginia striatula, *pl. VII, fig.* 2.

Coluber striatulus *Linné*, 1766, *Syst. ed. XII, I*, 375.

Small, moderately slender, subcylindrical, belly broad; head small, not distinct from the neck, subconical, narrow in front; tail short, stout, tapering. Snout moderate, narrow. Eye small, pupil round. Mouth-cleft medium, slightly curved. Nostrils anterior, directed outward. Crown-shields eight. Prefrontals long and broad, entering the orbit. One internasal. Rostral subtriangular, very small. Nasal in two parts, nostril in anterior. No loreal, fused with anteorbital. Orbitals 1—1. Temporals 1+1. Labials five, third and fourth in orbit, fifth largest. Infralabials six, fifth largest. Posterior pair of submentals half as long as the anterior. Scales keeled, in 17 rows, dorsal narrow, outer broad and faintly carinate. Ventrals 119—130. Anal bifid. Subcaudals 25—46 pairs.

Uniform greyish or reddish-brown; light yellowish or reddish beneath. With or without a band of light color across the occipitals which spreads upon the posterior labials. Massachusetts to Mississippi.

Virginia inornata *n. sp.*

Moderately stout, slightly depressed; head small, not distinct from the neck, subconical; tail short, tapering to a point. Snout short, blunt. Eye moderate, pupil round. Nostrils anterior, directed horizontally in the anterior portion of the divided nasal. Nine head-shields. Rostral very small, not reaching the top of the head. Two internasals (left smaller in each specimen). Loreal elongate, with the prefrontal forming the anterior border of the orbit. Prefrontals as broad as long. One postorbital. Temporals 1+1. Labials five, third and fourth in orbit, fifth largest. Infralabials six, fifth largest. Posterior submentals half as large as the anterior. Scales carinate, lustrous, in 17 rows, dorsal narrow, outer broad and faintly keeled. Ventrals 125—129. Anal divided. Subcaudals 36 pairs.

Uniform brownish olive on the dorsal rows. No band on the occiput. Ventrals whitish, tinged with olive on the bases. Largest specimen total length $10\frac{3}{12}$ inches; tail $1\frac{9}{12}$ inches. Texas.

VIRGINIA ELEGANS.

Kennicott, 1859, *Pr. Ac. N. Sc., Phil.*, 99.

"Resembles *V. valeriae;* vertical and occipital plates narrower. Dorsal scales very narrow and elongated, much more so than in *V. valeriae*, disposed in 17 rows.

"Color uniform light olivaceous brown above; dull yellowish white beneath. Readily distinguished from the nearly allied *V. valeriae* by the narrower dorsal scales in 17 rows instead of 15 as in that species." Southern Illinois and southward.

VIRGINIA VALERIAE, *pl. VII, fig.* 3.

Baird & Girard, 1853, *Cat. N. A. Serp.*, 127.

Moderate, subcylindrical, belly broad; head small, elongate, little larger than the neck, subelliptical; tail short, tapering to a point. Eye medium, over third and fourth labials, pupil round. Mouth-cleft deep, nearly straight. Snout narrow. Rostral erect, as broad as high. Nasal divided, nostril in anterior portion. No loreal. Internasals two. Prefrontals broad, entering the orbit. One elongate preocular, loreal and ocular united. Postoculars two (1 to 3). Temporals 1—2, anterior in a notch between the fifth and sixth labials. Frontal broad, subhexangular. Parietals elongate. Labials six, fifth and sixth larger. Infralabials six, fourth largest. Submentals two pairs, posterior rather larger. Scales smooth, or with a weak keel on those of hinder portion of the body, in 15 rows, dorsal broad, rhomboid, outer broader. Ventrals broad, 117—128. Anal bifid. Subcaudals 24 to 37 pairs.

Greyish-brown, with two to four irregular longitudinal series of black dots, sometimes absent. Belly uniform yellowish. Maryland to Georgia and Illinois.

VIRGINIA HARPERTI.

CARPOPHIS HARPERTI *Dumeril & Bibron*, 1854, *Erp. Gén. VII*, 135.
VIRGINIA HARPERTI *Cope*, 1875, *Check list*, *p.* 35.

Two triangular internasals. Prefrontals large, entering the orbit Frontal pentagonal. Nasal bifid. Loreal and anteorbital fused, forming a long subrectangular plate. Postorbitals three, second largest. Temporals 1+2, anterior large, not in contact with orbitals. Labials six, third and fourth in orbit, fifth largest, in contact with the parietal by its upper angle. Infralabials six. Two pairs of elongate submentals, posterior divergent. Scales smooth, in 15 rows. Ventrals 111. Anal bifid. Subcaudals 32 pairs.

Yellowish or olivaceous gray, punctulate with blackish. Lower portions white. South Carolina. (D. & B).

CARPHOPHIS.

Gervais, 1843.

Body comparatively stout, subcylindrical; head small, not distinct from the neck, depressed; tail stout, conical. Crown-shields normal, short, broad, often fused or subdivided. Snout prominent, rostral bent back on the top. Nasal entire. Preocular united with the loreal, or very small. Scales broad, smooth, glossy, in 13 to 15 rows. Anal bifid. Subcaudals in two rows.

A small preocular;	
a pair of internasals	*straminea.*
with transverse bands of black	*cincta.*
preocular united with the loreal;	
prefrontals and internasals fused	*helenae.*
prefrontals and internasals separate;	
back reddish-brown	*amoena.*
back black	*vermis.*

CARPHOPHIS STRAMINEA.

CHILOMENISCUS STRAMINEUS *Cope*, 1860, *Pr. Ac. N. Sc.*, *Phil.*, 339.

Internasals partly or entirely separated by the rostral. Frontal obtuse-angled in front. Labials seven, third and fourth in orbit. Infralabials eight, fifth larger. Submentals two pairs, hinder half as long as the anterior. Temporals 3+3. Scales hexagonal on the flanks, elongate on the back, in 13 rows. Ventrals 117. Subcaudals 22 pairs. Length 9 inches; tail $1\frac{1}{12}$ inches. Lower California. (Cope.)

CARPHOPHIS CINCTA.

CHILOMENISCUS CINCTUS *Cope*, 1861, *Pr. Ac. N. Sc., Phil.*, 303.

Internasals separated by the rostral. Nasal grooved behind the nostril. One small anteocular. Two postoculars. Labials 7, first long, remainder high, except the last two, which are nearly equilateral. Scales very broad, smooth, in 13 rows. Anal divided. Tail very short.

Reddish-white. Encircled by sixteen black rings upon the body and three upon the tail. Rings and spaces about equal, three to five scales each. Parietals and frontal black to the second labials. Chin shaded with black. Guaymas, Gulf of California. Possibly the same as the preceding. (Cope.)

CARPHOPHIS HELENAE.

CELUTA HELENAE *Kennicott*, 1859, *Pr. Ac. N. Sc., Phil.*, 100.

CARPHOPHIS AMOENA var. HELENAE, *Jan*, 1862, *Arch. per la Zoöl.*

"Snout shorter and narrower than in *C. amoena*. A single pair of frontal plates. Color above lustrous chestnut brown; beneath pale yellowish (flesh-color in life), color of the abdomen extending to second lateral row of dorsal scales. Readily distinguishable by the suppression of the anterior frontals." Mississippi, Illinois.

CARPHOPHIS AMOENA, *pl. VII, fig.* 1.

COLUBER AMOENA *Say*, 1825, *Jour. Ac. N. Sc., Phil.*, 237.

CARPHOPHIS AMOENA *Gervais*, 1843, *Dict. d'Hist. Nat.*, *III*, 191.

Small, moderately stout, subcylindrical, belly broad; head not distinct from the neck, crown convex, muzzle broad; tail short, near one fifth of the total, thick, conical. Eye small, pupil round. Mouth moderate, nearly straight. Head-shields nine, broad, excepting the supraciliaries, which are very small. Frontal hexagonal. Internasals small. Rostral about as broad as high, very convex. Nasal entire, the small nostril in its anterior half. No loreal. Orbitals 1—1, anterior elongate. One temporal. Labials five, third and fourth under the eye, fifth largest. Infralabials six, fourth largest. Submentals two pairs, posterior less than half as large as the anterior. Scales smooth, in thirteen rows, medial a little longer than broad, outer and caudal as broad as or broader than long. Ventrals 112—131. Anal divided. Subcaudals 24—36 pairs.

Uniform lustrous reddish-brown above (more red in life); light yellowish beneath to second row of scales (flesh-color or red in life). Mississippi Valley to Illinois and to Massachusetts.

VAR VERMIS.

CELUTA VERMIS *Kenn.*, 1859, *Pr. Ac. N. Sc., Phil.*, 99.

Larger than *C. amoena.* Prefrontals and internasals separate. Black color of the back reaching only to the third rows of scales. Missouri and Kansas. A variety of the preceding.

GEOPHIS.

Wagler, 1830.

Body elongate, subcylindrical; head scarcely distinct from the neck; tail short, subconical. Eyes small. Teeth equal, smooth. Crown-shields nine. Internasals much smaller than the prefrontals, rarely suppressed or fused. Nasal divided. Loreal and anteorbital united. Postorbitals one to two. Scales smooth, in 15 to 19 rows. Anal entire. Subcaudals in two rows.

- Scales in 15 rows;
  - back transversely banded with black;
    - parietal and labials in contact *semidoliatus.*
- scales in 17 rows;
  - back black;
    - frontal longer than broad;
      - parietal and fifth labial in contact *bicolor.*
  - back plumbeous;
    - frontal broader than long;
      - parietal and labials not in contact *latifrontalis.*
- scales in 19 rows;
  - back crossed by bands of black;
    - parietals and labials not in contact *lippiens.*

Geophis semidoliatus.

Rabdosoma semi-doliatum *Dum. & Bibr.*, 1854, *Erp. Gén. VII*, 93.

Body slender; tail short, stout. Scales smooth, in 15 rows. Ventrals 172. Anal entire. Subcaudals 24 pairs. Whitish inferiorly; the white also serves as a ground color for large quadrilateral black or brown spots or transverse bands on the back, which are separated by spaces narrower than themselves, and about thirty in number. The black cap on the head is separated from the first spot on the back by a narrow collar of white. Trunk 0^m, 275; tail 0^m, 027.

"Cinq plaques sus-labiales; pas de squamme temporale. Dessus du corps coupé en travers par de grandes taches noires, sur un fond blanc. Plaque rostrale fort grande; bord antérieur de la frontale brisé sous un angle très-ouvert; susoculaires extrêmement courtes; première nasale ne descendent pas plus bas que la seconde; point de préoculaire; une seule post-oculaire; cinq supéro-labiales, dout la 3^e seule touche à l'oeil; deux paires de plaques inter-sous-maxillaires. Queue robuste. . . . . . Il n'y a qu'une seule squamme temporale, mais elle est extrêmement développée; elle est oblongue pentagone inéquilatérale et située le long de la plaque pariétale au dessus de la dernèire supéro-labiale." Mexico. (D. & B.)

Geophis bicolor.

Günther, 1868, *Ann. and Mag. N. Hist.*, 416.

"Head rather broad, short, and depressed; body and tail of moderate length. Eye small. Anterior frontals about one fourth the size of posterior; vertical rather longer than broad, with the anterior angle very open; occipitals as long as postfrontals and vertical together, rounded behind; six upper labials, the third and fourth entering the orbit; the fifth is the largest, and forms a long suture with the occipital. The remainder of the temple is covered by scale-like temporals, 1+2. Two postoculars. Anterior chin-shields twice as long as posterior, in contact with four labials. Scales in seventeen rows, smooth, without apical groove. Ventrals 160—168; anal entire; subcaudals 39—48.

"Upper parts uniform black; below white; on the two or three outer rows of scales the white color appears in more or less distinct small spots, whilst the black of the upper parts extends to the angles of the ventral shields, each subcaudal black in front." Largest 14½ inches long; tail 3 inches. City of Mexico.

GEOPHIS LATIFRONTALIS *n. sp.*

Moderately stout, tapering slightly toward the head, belly broad; head not larger than the neck, depressed, snout broad, rounded, crown a little convex; tail stout, conical, short, near one eighth of the total. Eye very small. Head-shields nine. Rostral broader than high, bent back in a blunt angle on the top of the snout. Internasals small. Prefrontals large, as broad as long, entering the orbit. Frontal short, broader than long. Supraoculars small, nearly as broad as long. Parietals large, about twice as long as broad. Nasal divided. Loreal and anteorbital united. One postorbital (two on one side, lower very small). Temporals 1+2, anterior large. Labials six, third and fourth in orbit, fifth largest, and separated from the parietals by a long temporal. Infralabials seven, fourth largest. Submentals two pairs, short, broad; posterior half as long as anterior, scale-like. Scales smooth, lustrous, in 17 rows, medial little longer than broad, outer broader than long. Ventrals 179, broad. Anal entire. Subcaudals in two rows, 32 pairs.

Back uniform dark plumbeous, tinged with purple; margins of scales lighter. Ventrals white, mottled with leaden to uniform leaden. Total length 15¼ inches; tail 1¾ inches. Found fifty miles south of San Luis Potosi, Mexico, by Dr. Edw. Palmer.

GEOPHIS LIPPIENS.

SYMPHOLIS LIPPIENS *Cope*, 1861, *Pr. Ac. N. Sc.*, *Phil.*, 524.

Body stout, tail blunt, hardly twice as long as the head, ending in a convex shield. Muzzle prominent, obtuse. Teeth equal, smooth. Eye very small. Rostral large. Prefrontals as broad as long. Frontal long, right-angled at each end. Supraciliary and upper postocular fused, the former as broad as the frontal. Loreal in orbit. One small preocular over the loreal. Nasal united with the labial. Labials five, last not so high as long. One temporal. Scales poreless, broader than long, in 19 rows. Anal entire. Subcaudals bifid.

Yellow, with eighteen black bands. A band covers the muzzle to behind the eyes; two are on the tail. Total length 20¾ inches. Guadalaxara, Mexico. (Cope.)

TOXICOPHIDIA.

Snakes with fixed grooved or movable tubular fangs, connected by ducts with special glands for the secretion of venom.

Fangs grooved, erect, immovable.

PROTEROGLYPHA.

Tail conical	CONOCERCA.
Tail compressed	PLATYCERCA.

Fangs tubular, reclining, erectile.

SOLENOGLYPHA.

No pit between the eye and nostril	ABOTHROPHERA.
A pit on the side of the face	BOTHROPHERA.

CONOCERCA.

ELAPIDAE.

Body elongate; head moderate, crown flattened; muzzle short, broad, rounded; tail stout, short to medium. Loreal generally absent. Fangs erect, grooved, without or with smaller smooth teeth behind them. Eyes small to moderate, pupil round in most genera. Scales smooth.

Elaps, the only genus of the family of which species are known in North America, is also found in South America, Africa, and the East Indies.

ELAPS.

Schneider, 1801.

Cylindrical, moderately to very slender; head indistinct, rounded, depressed, crown flattened, muzzle short and broad; tail short, stout. Eye small, pupil round. No other tooth behind the fang. Nasal in two parts. No loreal. Anteorbital one, sometimes fused with prefrontal. Postorbitals two, sometimes one. Scales smooth, in 13—15 rows. Anal entire or divided. The American species are distributed from the Southern United States to the Argentine Republic. The species mentioned in the synopsis are those regarded as tolerably well established.

Black rings not in groups;
first broad ring behind the occiput black *fulvius.*
first broad ring behind the occiput red *euryxanthus.*
black rings in threes;
occipital band red; a yellow band in front of the eyes; middle band of group wider *decoratus.*
occipital band black;
black bands subequal, narrow; 13—14 groups *elegans.*
occipital band yellow;
middle band of each group much wider; 7—8 groups *laticollaris.*

Elaps fulvius, *pl. VIII, fig.* 3.

Coluber fulvius *Linné*, 1766, *Syst. Nat., ed. XII, p.* 381.
Elaps fulvius *Cuvier*, 1817, *Regn. Anim., ed. I, p.* 84.

Slender, cylindrical; head little broader than the neck, depressed, rounded; tail short, thick, conical, near one seventh of the total. Mouth-cleft medium, nearly straight. Head-shields nine, short, broad. Rostral low, broad, subtriangular. Nasal in two parts, nostril between, anterior larger. Orbitals 1+2, exceptionally one postorbital. Labials 7 (6—8), third and fourth in orbit, fifth, sixth, and seventh larger. Infralabials 7, fourth large, in contact with the posterior pair of submentals. Scales smooth, broad, in 15 rows, outer broader. Ventrals 202—236 (*tenere*, *B. et G.*, 224—236). Anal divided, sometimes entire. Subcaudals 25—44 pairs. Head and tail ringed with black and yellow, body with black, red, and yellow. Head black, with a yellow ring crossing the occipitals, its width equal to their length, widening downward. Body encircled by 13—20 rings of each of the black and the red, in some of the varieties the number is greater. The yellow are twice as many and serve as borders to the black, in some cases they are nearly obsolete. All the rings vary much in width, commonly the yellow ones are very narrow, and with the included red one, occupy about as much space as one of the black; frequently the black is the narrower. The red is generally spotted or dotted with black; specimens from Alabama and Florida show in the midst of the red band an oblong spot on each side of the vertebral line and a large rounded spot on the middle of the belly. Largest specimen two feet in total length; tail three inches. Hab. Southern United States to Mexico, and southward through varieties.

var. NIGROCINCTUS.

ELAPS NIGROCINCTUS *Girard*, 1854, *Pr. Ac. N. Sc., Phil.*, 226.

Head black to the middle of the parietals. Body encircled by 19—21 white-bordered black rings, separated by red spaces. Some scales and some of the ventral plates in the red spaces marked with black. Tail with about six rings, black and white. Ventrals in one specimen 222+55. The white color was probably yellowish in life. Mexico and Central America.

var. AFFINIS.

ELAPS AFFINIS *Jan.*, 1859, *Rev. & Mag. Zoöl.* (*Prodr. Ophid.*, *pp.* 6 *and* 14, *pl. B*).

Head black from muzzle to postorbitals. A yellow space extending to the third or fourth scales on the neck is followed by bands of black three or four scales wide separated by red spaces of ten to fourteen scales each. In the red spaces the scales are tipped with black, and there are also black spots of greater size irregular shape and position. Ventrals 216; anal divided; subcaudals 40 pairs. Mexico.

var. DISTANS.

ELAPS DISTANS *Kennicott*, 1860, *Pr. Ac. N. Sc., Phil.*, 338.

"Body slender, with very narrow black rings, four or five scales in width, separated by intervals three or four times as wide, of brownish or reddish, entirely unspotted. No light rings separating the red and black ones. Under lip and jaw wholly without black, and the tip of the nose light." Chihuahua, Mexico (Kenn.) Florida (Cope.)

var. APIATUS.

ELAPS APIATUS *Jan.*, 1859, *Rev. & Mag. Zoöl.* (*Prodr. Ophid.*, *p.* 11).

Snout tipped with black. A spot of yellow in front of the eyes. A black band across the head through the eyes to the labials. A black collar behind the parietals four scales in width. Thirty-one black bands on the body; eight on the tail. The scales in the red spaces are not spotted with black, but here and there are scales entirely of that color. Ventrals 202; anal divided; eight entire subcaudals and 33 pairs. (Jan.)

var. EPISTEMA.

ELAPS EPISTEMA *Dumeril & Bibron*, 1854, *Erp. Gén. VII*, 1222.

Back with large spots of black, without rings. Black of muzzle extending to postorbitals. Occiput and throat yellow. Behind this a black collar interrupted at the first abdominal shields. Large rounded light-bordered black spots, ten in number, widely separated on the body. Tail with three wide rings of black. Scales of back black-tipped; belly probably uniform red or yellow. Mexico. (D. & B.)

var. DIASTEMA.

ELAPS DIASTEMA *D. & B.*, 1854, *Erp. Gén. VII, p.* 1222.

Muzzle and vertex black. Occiput crossed by a band of white or red (yellow), behind which there is a black one extending under the throat. Fourteen or fifteen black white-bordered rings on the body, separated by white (red) spaces ten or twelve times as wide, in which the scales are black-tipped. A second specimen had reddish intervals and twenty-one rings. Mexico. (D. & B.)

var. CEREBRIPUNCTATUS.

ELAPS CORALLINUS var. *Peters,* 1869, *M. B. Berl. Akad.*, 877.

Snout to parietals black. A yellow band across the parietals. From the parietals a black yellow-edged band covers the first seven rows of scales. Ten narrow yellow-edged black rings on the body. Tail black and yellow. The scales in the broad red spaces are tipped with black. Pueblo, Mexico.

ELAPS EURYXANTHUS.

Kennicott, 1860, *Pr. Ac. N. Sc., Phil., p.* 337.

"Head very small, narrower than the neck; entirely black as far back as the angle of the mouth. Banded alternately with black and light brick-red, separated by narrow rings of creamy white, all the bands immaculate. First broad ring behind the occiput red instead of black as in the other species." Sonoran region.

ELAPS LATICOLLARIS.

Peters, 1869, *Monatsb. Berl. Akad.*, 877.

Head black to the parietals. A yellow band across the parietals covers the first two rows of scales. Behind this a black ring of twelve or thirteen scales in width, then a yellow of three or four scales, and then a black of four or five precede the first red one, which occupies from six to nine scales. Similar red rings separate the eight or nine triads of black ones on the body. The middle ring of each triad is nearly twice as broad as the others, from which it is separated by narrow yellow spaces. The red scales are black-tipped. Tail, with three broad black, separated by narrow yellow rings. Pueblo, Mexico.

Elaps decoratus.

Jan., 1859, *Rev. & Mag. Zoöl., Prodr. Icon. Ophid., pp.* 7, 14, *pl. B.*

Rostral and internasals black. A black band on the frontals reaches the labials. A collar of black behind the parietals; behind this a narrower ring separated by four scales of yellow. A band in front of the eyes yellow; that on the occiput red. Seven scales behind the second black band on the neck are red, then commence the triplets of black. In each triad the outer bands are about half as wide as the middle, which occupies three or four scales, separated from the others by narrow spaces of yellow. Number of triads fourteen, separated by as many spaces of red, in which the scales are black-tipped. Ventrals 204—218. Subcaudals 14—20. Mexico.

Elaps elegans.

Jan., 1859, *Rev. & Mag. Zoöl. Prodr. d'une Icon. Ophid., pp.* 6, 13, *pl. B.*

Muzzle to postoculars black. A white parietal band is interrupted on the middle of the head. Behind this to the neck the head is black. A couple of series of white scales on the neck precede a large triangular black spot posterior to which there is a white (red) space of three or four black-tipped scales. From this point there are thirteen or fourteen triads of black rings, more or less confluent on the abdomen, separated by single series of white scales. The intervals between the groups is about the width of the rings themselves, three or four scales each. Tail black, with six white bands on single series of scales. Ventrals 199—213+29—37.

PLATYCERCA.

HYDROPHIDAE.

Sea serpents. Venomous. Elongate, subcylindrical anteriorly, compressed posteriorly; head rather indistinct, generally depressed; tail short, compressed into a paddle. Eye small, pupil round. Fang small, erect, grooved in front, followed by other teeth. Nostril valvular. Head-shields generally irregular. No loreal. Scales small, with or without keels, or tubercular. No claw at the side of the vent. Hab. tropical portions of the Indian and Pacific oceans, sometimes entering fresh waters.

PELAMYS.

Daudin, 1803.

Moderately long; neck rather large; head depressed; snout long, broad. No internasals. Nasals in contact, nostrils near the hinder margins. No loreal. Scales small, not imbricate. Ventrals indistinct or small. Lower jaw not notched in front. One species of this genus is frequently met with off the western coasts of Southern Mexico.

PELAMYS PLATURA.

Much compressed posteriorly; neck stout; head little larger than the neck, long, depressed; snout long, broad, and rounded in front; tail short, of moderate width. Head-shields abnormal. No internasals. Nasals longer than broad, nostril near the outer posterior angle. Prefrontals hexagonal, receiving the anterior angle of the frontal between them. No loreal. One anteorbital, sometimes two. Two to three postorbitals. Labials 7—9, second larger. Scales polygonal, commonly hexangular, not imbricate; lower with a convexity or tubercular keel; upper flat. In the specimen before me there are 53 rows around the middle of the body. Ventral scales similar.

Back (23 rows of scales) and top of head black. Upper lip and lower half of body yellow. Lower lip marked with black. Tail with three transverse bands of black, the rounded ends of which extend near the lower margin, where they alternate with four spots of black. Vent in a spot of black. Tip of tail black. The coloration varies greatly in different individuals. The specimen described was taken on the western coast of Nicaragua.

SOLENOGLYPHA.

BOTHROPHERA.

CROTALIDAE.

Stout, fusiform; head large, distinct from the neck; subtriangular, crown flat; tail short, with a rattle formed of horny rings, or tapering to a point as in the Colubers. Pupil oblong, erect. A pit between the eye and the nostril. Fangs tubular. Venom glands behind the eye at the side of the skull. Scales keeled. Anal entire.

- With a rattle;
  - parietal shields scale-like; frontal absent or divided CROTALUS.
  - frontal and parietals present SISTRURUS.
- without a rattle;
  - frontal and parietals present ANCISTRODON.
  - crown-shields scale-like;
    - subcaudals in two rows except near entremity LACHESIS.
    - subcaudals in two rows, rarely entire;
      - supraciliaries normal TRIGONOCEPHALUS.
      - supraciliary small, commonly with a row of small prominent scales along its edge TELEURASPIS.

CROTALUS.

Linné, 1754.

Tail terminating in a rattle. A deep pit in front of the eye. Top of the head covered with scales, with several larger plates in front, or, in the subgenus *Crotalophorus*, having parietals and frontals as in the *Colubridæ*. Anal entire. Subcaudals simple, a few of the posterior sometimes divided.

- Parietals and frontals scale-like;
  - nasal divided;
    - scales in 29 to 31 rows; keels swollen or tubercular;
      - a dorsal series of diamond-shaped spots *durissus.*
    - scales in 25 to 29 rows; keels not tubercular;
      - a dorsal series of diamonds, varying to oblong subquadrangular spots or to transverse bands *adamanteus.*

scales in 23 to 25 rows;
a dorsal series of more or less irregular and broken transverse bands *horridus.*
nasals undivided;
supraciliary produced as a sort of horn;
scales in 21 to 23 rows *cerastes.*
"supraciliaries and other large plates smooth" *lepidus.*
nasals divided;
scales in 21 to 23 series, slightly carinate *tigris.*
scales in 23 to 25 rows *lugubris.*
parietals and frontals like those of the colubers;
scales in 23 to 25 rows *catenatus.*
scales in 21 to 23 rows *miliarius.*

CROTALUS DURISSUS.

Linné, 1758, *Syst. Nat., ed. X, I*, 214.

Stout, elongate, fusiform; belly broad; head large, triangular, tail short, thick, with more or less acuminate rattle. Eye small. Internasals triangular. Frontals two pairs. Scales of occiput and temples keeled. Rostral touched by six plates. Two anteorbitals; upper large, quadrangular; lower elongate, narrow, sometimes crowded from the orbit. Two loreals. Five small orbitals beneath and behind the eye. Three (2—5) rows of scales between suborbitals and labials. Labials 13—16, first and fifth rather larger; infralabials 14—18. Submentals one pair, large, or, through division of the anterior pair of infralabials, two pairs, anterior small. Scales lozenge-shaped, with strong swollen keels, in 29—31 rows, outer broader, outer row smooth. Ventrals broad, 175—183+19—33 (175—199+19—33.)

Yellowish-brown. A light-edged dark band across the head, through the eyes to the angle of the mouth. A similar band of dark brown from the head behind the supraciliaries on each side of the neck. These are followed by a dorsal series of 25—27 (25—30) diamond-shaped spots of brown, with lighter center and yellow borders occupying single rows of scales. The borders continue upon the flanks there inclosing rhombs of the ground color, and below them a series of half-rhombs which alternate with a series of smaller spots on the lower edge of the side. Belly yellowish, clouded or mottled. Hab. Mexico to Brazil.

CROTALUS TRISERIATUS.

CROTALUS TRISERIATUS *Wiegm., Mus. Berol.*

UROPSOPHUS TRISERIATUS *Wagler*, 1830, *Syst. Amph., p.* 176.

"Notaeo olivaceo serie macularum in spina dorsi irregularium rhombearum, rufuscenti-fuscarum, margine antico nigro-limbatarum, serie macularum minorum, ejusdem formæ ac coloris in utroque latere, posteriorum cum mediis confluentium, anteriorum a mediis taeniola pallida diremtarum; gastraeo nigricante versus collum albescente; vitta pone oculos rufo-fusca." Mexico. (Wagler.)

CROTALUS ADAMANTEUS.

Beauvois, 1799, *Trans. Am. Phil. Soc. IV*, 368.

Stout, fusiform; head large, triangular, broad behind, covered with small scales; tail short, thick. Eye moderate. Two or more pairs of rugose small internasals and prefrontals. Head covered with small keeled scales. Supraciliaries large, rugose, separate from the rostral by three (3—4) plates. Rostral higher than broad. Anterior portion of nasal larger, quadrangular, posterior narrow. Anteorbitals two; lower small, angular. Two loreals, or upper united with a small prefrontal. Sub and postorbitals five to six, small. Three (3—4) rows of scales between suborbitals and labials. Labials 14—16, first and fourth larger. Infralabials 15—19. Submentals one pair, large. Scales pointed, with strong keels, in 27—29 rows, outer broad, with keels obsolete. Ventrals broad, 169—179+1+21—32 (169—188+19—32.)

Yellowish-brown, with a dorsal series of 27—36 rhomboidal yellow-margined, light-centered, dark-brown spots. Single series of yellow scales form the margins; these meet on the fifth or sixth rows on the flank, where they inclose an alternating series of less distinct rhombs and an opposite series of half-rhombs on the outer rows. Posteriorly the spots fuse and become transverse bands. Belly yellowish, more or less blotched or punctulate with brown on the bases of the scutes. Tail black or barred with bands of black. A dark band included between narrow white lines from the forehead through the eye to the angle of the mouth. A narrow white line on each side of the pit, nostril, and on each edge of the rostral shield, Hab. North Carolina to Texas, and through varieties to California and Mexico.

var. SCUTULATUS.

CAUDISONA SCUTULATA *Kenn.*, 1861, *Pr. Ac. N. Sc., Phil.*, 207.

Rattle and rostral plates as in *C. lucifer.* Dorsal rows 25; superior labials 16; 3—4 rows of interorbital scales, bounded in front by two shields. Yellow stripe from eyebrow above rictus oris. Yellowish-brown, with a dorsal series of truncate, brown, yellow-edged rhombs; tail black-ringed. (*Kenn.*) Arizona.

Colors resembling somewhat those of *C. adamanteus.* About thirty dorsal rhombs. Rostral higher than wide, upper angle acute. Internasals and prefrontals regular, without small scales or plates around them. A pair of plates between the front portions of the supraciliaries and a pair of smaller ones behind them. Anterior portion of the nasal twice the size of the posterior. Two small loreals, one above the other. One or two rows of scales between the labials and suborbitals. Scales in 25 series. Ventrals 172+21. Taken by Dr. Edw. Palmer near San Luis Potosi, Mexico.

var. ATROX.

CROTALUS ATROX *Baird & Girard*, 1853, *Cat Serp., pp.* 5 *and* 156.

Marked by bleached colors, shortening of the rhombs in the dorsal series and increase in their number and tendency posteriorly to fuse with the lateral spots. Sometimes the anterior infralabials are divided, forming a small pair of submentals behind the mental. Labials 14—19. Scales in 25—27 rows (25—29), outer two or three smooth. Ventrals 179—186+20—24, one to several of the subcaudals paired. Hab. Texas to Mexico.

CROTALUS MOLOSSUS.

CROTALUS MOLOSSUS *Baird & Girard*, 1853, *Cat. Serp.*, 10.

Two internasals. Four prefrontals. A pair between the supraciliaries in contact with each other and the prefrontals. Labials 18. Infralabials 17. Scales in 29 rows.

Yellowish. With a dorsal series of rhombs similar to those of *C. adamanteus*, with the outer angle produced down the side as a vertical bar, centers light, confluent anteriorly. Ventrals 187+25. New Mexico.

CROTALUS CONFLUENTUS.

CROTALUS CONFLUENTUS *Say*, 1823, *Long's Exp. II*, 48.

Distinguished from *atrox* by the subdivision of the head-shields, a greater shortening of the spots in the dorsal series, and the ashy colors. The number of spots and bands is increased. Internasals divided so as to place small plates between them and the nasals. Loreals two or one—the upper being united with the small prefrontal. A single scale between the anterior suborbital and the labial. Labials 14—17. Scales in 25—29 rows, outer two or three smooth. Ventrals 178—186+19—27, posterior subcaudals bifid or entire. Spots in dorsal series 41—54. Young with the white lines very distinct on the head. A lot of specimens from the same locality have the rows of scales in 25, in 27, and in 29 rows.

Specimen 2455 (*Mus. Comp. Zoöl.*), taken near Ft. Hays, Kansas, by Mr. J. A. Allen, has a supraciliary produced as in *C. cerastes*, two loreals on one side and one on the other, and 29 rows of scales. *C. pyrrhus*, I am inclined to think, was founded upon an individual variation.

CROTALUS LUCIFER.

CROTALUS LUCIFER *Baird & Girard*, 1852, *Proc. Ac. N. Sc., Phil.*, 177.

Spots or rhombs broader than in *atrox* or *confluentus*. Colors generally darker. The black band from the eye backward passes above the posterior labials. Nasal and anterior labial frequently separated by small scales. One or two scales between the anterior suborbital and the labials. Loreal one, sometimes two. Internasals subdivided, separated by a row of small scales from the nasals (sometimes from rostral also). Labials 13—16. Scales in 25 (25—27?) rows. Ventrals 169—179+19—24. Spots and bands 30—42. Hab. .

CROTALUS EXSUL *n. sp.*

Comparatively slender; neck small; head large, broad behind, outline as seen from above a suboval; snout short, broad; tail short. Eye moderately large. Head covered with small imbricate striate scales; a pair of larger ones in contact with the rostral and each other, another pair in contact with the nasals, but separated by a pair of small prefrontals. A larger scale on each side between supraciliary and postnasal. Supraciliaries large, striate. Rostral higher than wide, subtriangular, rather pointed above. Anterior nasals large, narrowing toward the rostral; posterior higher and shorter. Loreals two, or upper fused with prefrontal. Anteorbitals two, upper large, lower elongate, narrow. Three plates surround the pit, in front of which is a group of smaller scales (7—11). Sub and postorbitals 6—7. Anterior orbital separated from the sixth labial by two scales. Cheek scales larger than labials, smooth. Labials 16—17, sixth largest. Anterior pair of infralabials small, not in contact. A pair of moderately large and broad submentals, separated in the anterior half of their length by a pair of wedge-shaped plates. The mental is separated from the submentals, and the anterior infralabials from each other by a pair of polygonal plates somewhat larger than the labials. Scales in 27 rows, striate and keeled, except the outer two. Ventrals 188+24. Rattle resembling that of *adamanteus.* In the specimen described, which is quite small, from the hindmost ring of the rattle to the fifth there are eight which show a very slight increase in size; in front of these the next has suddenly enlarged, and from this to the twelfth and most recent the size remains the same.

Light greyish-brown. Shapes of markings similar to those of *C. lucifer.* About thirty-three rounded, dark-edged spots on the back, separated by whitish spaces of a scale in width, and twice as many small spots on the lower edge of the flank, which also bears faint indications of a series alternating with the dorsal. Tail, with a dorsal series of black spots opposed to others on each side, with which they are more or less confluent. Belly uniform white or clouded lightly with olive near the flanks. Head nearly uniform brownish-grey, with faint indications of a light band from the frontal region to the central and hinder labials. A very faint band of light behind the eye toward the angle of the mouth. Total length 20 inches; tail 1½ inches. Hab. Cedros Island, Lower California. Prof. Alex. Agassiz, two specimens.

CROTALUS HORRIDUS, *pl. IX, fig.* 1.

Linné, 1758, *Systema Nat., ed. X, I*, 214.

Stout, elongate fusiform; head distinct, triangular, very broad behind; neck small; tail short, thick, slightly compressed, outlines of the rattle approaching the parallelogramic. Head with one or more pairs of rugose plates in front. A pair of internasals, generally present, separated from the large elongate supraciliary by a single plate. With or without a pair or more of small frontals. Rostral higher than broad. Nasal in two portions, anterior large, posterior narrow. Generally two small loreals, sometimes more. Eye rather large. Two anteorbitals; lower small, triangular, touching the orbit in a sharp angle. Sub and postorbitals five or six, small, anterior separated from the labials by one or two scales. Cheek scales larger, smooth. Labials 12—16, first and fifth larger. Infralabials 13—18. A pair of large submentals. Scales keeled, in 23—25 rows, outer broad, nearly or quite smooth. Ventrals 165—175+19—25.

Brownish yellow to yellowish-brown or black. A dorsal and two lateral series of light-edged black spots, which become confluent into transverse bands posteriorly. Anteriorly the spots appear as if formed of sections of a zigzag band. Tail banded in young, black in adults. The young have the spots lighter in the center; a pair of elongate spots extend from the back of the head on the neck; a band extends from the eye across the angle of the mouth, a series of small oblong spots on the flank alternates with those of the other series, and occasionally the anterior spots of the dorsal series are bifid. There is great variation in shape and size of spots and in depth of ground color; some are almost black, others are of a sulphur yellow. The sides of the rattle are nearly parallel in old specimens, and commonly there is a secondary groove or series of indentations between the median groove and the upper edge. In a specimen of a total length of fifty-four inches the tail is less than four. Hab. Massachusetts to Mississippi.

CROTALUS CERASTES.

Hallowell, 1854, *Pr. Ac. N. Sc., Phil.*, 95.

Small; head small, not angulate, crown tubercular. A single large nasal. Lateral edge of supraciliary produced above the eye so as to resemble a horn. Labials 11—13. Rows of scales 21—23. Ventrals 146+17.

Yellowish, with a dorsal series of indistinct brown blotches, below which on the flanks are irregular series of brown dots. A brown stripe from the orbit over the angle of the mouth. (From descr.) Hab. desert regions about the Gila and Colorado rivers.

The supraciliary is sometimes produced upward in specimens of *C. confluentus*, which see.

CROTALUS LEPIDUS.

CAUDISONA LEPIDA *Kenn.*, 1861, *Pr. Ac. N. Sc., Phil.*, 206.

"Head ovoid, tapering to the nose, which is very narrow, pointed, and much depressed. Nostril very small, circular, and placed near the point of the nose in about the middle of a single nasal. Two elongated frontals (internasals) in contact, extending behind the nostrils. Supraciliaries and other large plates smooth. Rostral subtriangular, broader than high, the apex turned back slightly upon the crown. Upper preorbital small, and separated from the postnasal by the width of two larger plates. Labials rather large, 12 above, 10—12 below. Color of head yellowish ash."

"By the smoothness and size of the plates and absence of the horn, it will at once be distinguished from *C. cerastes*." Two heads from Presidio del Morte and Eagle Pass were described. Species of doubtful position.

CROTALUS TIGRIS.

(*Kenn.*) *Baird*, 1858, *U. S. and Mex. Bound. Survey Rept.*, 14, *pl. IV.*

Slender; head small, depressed. Supraciliaries and frontals smooth. Four frontals, six postfrontals (does this mean a pair of internasals, a pair of prefrontals and dissected frontal and parietals?) Two rows of scales between suborbitals and labials. Labials 14 above, 13—14 below. Series of scales 21—23, very slightly carinated.

Color yellowish ash above, with rather small, indistinct dorsal brown blotches anteriorly; two posterior thirds of body banded with brown. (Kennicott.) Deserts of Gila and Colorado.

Two internasals. Two prefrontals. Two shields between the supraciliaries, separated somewhat in front by a triangular shield; behind these irregular scales or small shields. Labials 10, a small shield separating the fourth and fifth from the eye. Series of scales 21. Ventrals 160+21.

Brownish, with seven series of spots, median larger, confluent posteriorly. A dark band from the lower border of the orbit above the angle of the mouth. (*C. intermedius.*) Mexico.

CROTALUS TRISERIATUS.

Wagler, 1830, *Syst. Amph.*, 176.

A pair of internasals. Four or more prefrontals. Frontal region covered with scales or small polygonal plates. Labials 12—14. One to two scales between suborbitals and labials. Series of scales 23—25, outer two smooth. Ventrals 137 to 154—166+21—31.

A pair of oval dark-brown spots on the occiput. An elongate spot on each side of these from the supraciliary above the hinder labials. A bar from each internasal through the eye to the angle of the mouth. A bar from the eye to the labials. A light line across the head on the supraciliaries. A pair of large elongate spots on the neck between the hinder extremities of the bars from the supraciliaries. Body with three series of spots on each side, upper two more or less confluent; the upper is larger and darker, and has somewhat the appearance of a medial series that has been divided by a vertebral line. Infralabials with three or four spots on each side. Belly irregularly spotted with brown, darker backward. Mexico.

(*Sistrurus.*)

CROTALUS CATENATUS, *pl. IX, fig.* 2.

CROTALINUS CATENATUS *Raf.*, 1818, *Am. Month. Mag., IV*, 41.

Larger than *C. miliarius*, with which it agrees in plan of coloration, except in the possession of a dorsal band of red, which, however, is not always present in that species. It is readily distinguished by a large anteorbital in contact with the nasal and prefrontal, a small subtriangular loreal, which does not reach the prefrontal, and a greater number of dorsal rows and of ventral scutes. Rostral high, with seven sides, all concave. Nasals large. Loreal small, subtriangular, acute-angled between the anteorbital and nasal. Anteorbitals two; upper large, much longer than the lower, bent upward to meet the prefrontal, in contact with the nasal; lower narrow. Sub and postorbitals 3—5. One to five small scales in front of the pit. The large suborbital in contact with the fourth and fifth labials. Labials 11—14. Scales in 23—25 rows, one to three of the outer smooth. Ventrals 136—153+20—29. Spots in the dorsal row, 35—48.

Varies from light ashy brown to black on the back. Beneath the range is from yellowish, spotted or punctulate with olivaceous, to dark olive or slaty brown, flecked with lighter. In cases the spots on the flank are separated by very narrow lines of light color. Specimens from the more exposed prairies are apt to be ashy and faded above and very dark beneath. Seven series of spots, dorsal large and more or less emarginate in front and behind, along the middle of the body; frequently one or two of the lateral series are obsolete.

Top of head brown, with a light band on the fore parts of supraciliaries and frontal, a brown band from each parietal shield to the first blotch on the neck, a brown band from the eye to the neck, separated from the parietal by a light space, a light band from the nostril around the angle of the mouth, and a vertical bar of light color on each side of the pit. Labials dark. Lower lip with two light spaces on each side. Marks of head sometimes obsolete. Hab. Mississippi Valley from Ohio.

CROTALUS MILIARIUS.

Linné, 1766, *Syst. Nat.*, *ed. XII, I*, 372.

Small. Body fusiform; head distinct, broad behind, narrow and angular forward, with flat crown; tail short, rattle small. Eye small. Rostral high, broad near its upper extremity. Anterior nasal much larger. Nostril small. Loreal four-sided, largely in contact with the prefrontal. Two anteorbitals, upper much broader. One to four small scales in front of the pit. Sub and postorbitals four to six, anterior large. Cheek scales large, smooth. Labials 10—12. Infralabials 8—13. Scales in 21—23 rows, median pointed, all keeled, or the outer smooth. Ventrals 130—139+27—35, posterior subcaudals often bifid.

Greyish or ashy brown, varying from quite light to very dark. A dorsal series of 30—43, large light-edged more or less irregular black spots, bandlike or divided toward the tail. Three series of alternating smaller spots on the flank, the upper often indistinct—sometimes obsolete, the lower on the edge of the abdomen. The majority of specimens have a narrow reddish band along the middle of the back, more distinct between the spots, though apparently crossing them. Three series of alternating spots on the belly, blending posteriorly, commonly irregular forward. Tail with six to twelve transverse bands. Head marked as in *C. catenatus*. Usually the parietal bands do not meet on the neck in the first spot of the dorsal series. The light band across the frontal and supraciliaries is sometimes indistinct, as are also the vertical bars on each side of the pit. The light band from the nostril around the angle of the mouth and the two spots on each side of the lower jaw are more distinct. The dark band from the eye to the neck varies much in length. Hab. Southern United States to Mexico.

var. RAVUS.

CROTALUS RAVUS *Cope*, 1865, *Pr. Ac. N. Sc., Phil.*, 191.

CAUDISONA RAVA *Cope*, 1875, *Check List, p.* 33.

Scales in 23 rows. Ventrals 147+26.

Color yellowish, with from 26 to 31 elongate narrow parallelogramic deep brown spots, four scales long to five wide, and a series of as many short, transverse bars on the sides opposite them; a series of thrice the number of small spots on the interior rows of scales. Head pale, without spots or marks, except a minute punctulation. A brown anteriorly furcate nuchal spot. Table land of Mexico. (From descr.)

ANCISTRODON.

Beauvois, 1799.

Head triangular; snout prominent, its sides forming an acute angle with the top; tail without a rattle, tapering to a point. Head-shields nine. Frontal and parietals large. Loreal present or absent. Scales in 23—25 rows.

A loreal; scales in 23 rows	*contortrix.*
no loreal; scales in 25 rows	*piscivorus.*

ANCISTRODON CONTORTRIX. (*Copperhead.*) *Pl. VIII, fig.* 1.

BOA CONTORTRIX *Linné*, 1766, *Syst. Nat., ed. XII, I*, 373.

AGKISTRODON CONTORTRIX *Baird & Girard*, 1853, *Cat. Serp. N. Amer.*, 17.

Body moderately stout, elongate fusiform, belly broad, back slightly compressed; head distinct, subtriangular, broad behind, crown flat; tail short, pointed. Head-shields nine. Parietals more or less broken posteriorly. Many specimens have small scales at one or both ends of the frontal. Rostral broad to the upper extremity. Nasal in two parts, anterior larger. Loreal moderate, in contact with prefrontal. Anteorbitals three, upper large, middle narrow, lower very small. Sub and postorbitals 4—6, separated by one scale from the third and fourth labials. Supralabials eight, first two and last smaller. Infralabials ten, second and last smaller. One pair of submentals large, followed by two pairs of smaller ones. Scales in 23 rows, outer broad, smooth, or faintly keeled. Ventrals 146 to 154. Subcaudals 42—49, commonly some of the posterior bifid.

Light reddish-brown, lighter below, with fifteen to twenty inverted **Y**-shaped darker spots, which vary in position from opposite to alternate, on each flank. About twice as many dark spots appear on each edge of the abdomen, sometimes spreading and confluent. All the scales are punctulate with brown. Head brighter, more copper-colored, sides with a band of cream color, bordered by a narrow line of light, inclosed by another of dark, passing from the upper postorbital above the labials around the angle of the mouth, and forward through the middles of the infralabials. A small round, light-edged spot of dark brown near the inner edge of each parietal. Tail darker. Terrestrial.

ANCISTRODON PISCIVORUS. (*Moccasin.*) *Pl. VIII, fig.* 2.

CROTALUS PISCIVORUS *Lacépède*, 1789, *Hist. Serp. II, pp.* 130 *and* 424.

ANCISTRODON PISCIVORUS *Cope*, 1859, *Pr. Ac. N. Sc., Phil.*, 336 (*name*).

Body stout, fusiform, belly broad, back slightly compressed; head distinct, subtriangular, broad behind, crown flat; tail short, pointed. Head-shields nine. Occipitals more or less broken posteriorly. Rostral broad to the upper extremity. Nasal in two parts, subequal. No loreal. Anteorbitals three, upper large, middle small, not reaching the nasal, lower very small. Postorbitals four (3—5.) Supralabials eight (7—9), third larger, reaching the orbit, first and last small. Infralabials ten (10—11.) Submentals one pair large, followed by two pairs of small. Scales in 25 rows, outer faintly keeled. Ventrals 136 to 145. Subcaudals 42 to 54, some of the posterior bifid.

Brown, reddish or olive. Eleven to fifteen more or less irregular and badly defined vertical bars or pairs of bars of dark brown, with lighter centers, on each flank. Tail dark brown or banded. Brownish-yellow beneath, with blotches of dark, which sometimes spread over the entire abdominal surface. Head uniform above, light-colored specimens showing a small round spot of dark near the inner edge of each parietal. A yellow-edged, dark band as wide as the eye passes from the postorbitals above the angle of the mouth to the neck. Three similar bands on the infralabials of each side. The head-markings are sometimes obsolete. In the variety *pugnax* from Texas the second labial is narrowed or crowded up. The total length of a large specimen is 44¼ inches; tail 6½ inches. Aquatic. Southern States, from the Carolinas to Texas.

The following is taken from a Mexican specimen: Markings similar to those of *A. piscivorus*, posterior part of body almost black, general appearance very dark. Labials eight, third and fourth below the eye, separated from it by the sub and postoculars (5). Two anteoculars. No loreal. The specimen has five pairs of submentals, the anterior nearly twice the size of those next following. Scales in 24 rows. Ventrals 135. Subcaudals one pair, plus eleven entire, plus thirty-one pairs. Mexico.

LACHESIS.

Daudin, 1803.

Body long, back compressed, belly broad; head large, broad behind, crown flat; tail short, pointed. Fangs and pit as in *Crotalus*. Pupil vertical. Crown covered with small keeled scales. Scales with tubercular or swollen keels. Tail without a rattle, pointed. Anal entire. Subcaudals in two rows, except near the extremity, where they are small and keeled like those of the upper surface. Brazils to Mexico.

LACHESIS MUTUS.

CROTALUS MUTUS *Linné*, 1766, *Syst. Nat., ed. XII*, 373.
LACHESIS MUTUS *Daudin*, 1803, *Hist. Rept. V*, 351.

Resembles *Crotalus durissus* in form and squamation. Elongate, tapering to neck and tail, flanks compressed, belly broad; head large, broad behind, crown flat; tail short, near one twelfth of the total, thick, pointed. Eye moderate, pupil erect. Crown-shields small, keeled. Supraciliaries large. A pair of internasals, separated by small scales. A few large scales about the pit. Labials ten (9—10), third large and below the pit, sometimes a small plate wedged between the second and third. Infralabials 15—16, anterior largest. Submentals one pair of large, followed by several pairs of small ones. Scales lozenge-shaped, broad, keeled, in 33—35 rows, outer broader and faintly keeled, inner with tubercular or swollen keels. Ventrals broad, 221—230. Anal entire. Subcaudals 33—35 pairs, followed by small keeled scales under about one sixth of the length of the tail.

Yellowish-brown, with about twenty-eight (27—29) light-centered brown lozenges on the back, more or less united along the vertebral rows, and produced toward or upon the ventrals. Flanks between the dorsal lozenges with or without spots or blotches of brown. Tail with 4—7 transverse blotches of brown or black, separated by narrow spaces of light color. Lower surface yellow, somewhat clouded posteriorly. Head spotted with dark on the parietal region, with a transverse band of dark in front of the supraciliaries through the eye to the hinder labial. Description from Brazilian specimens. Species said to occur in Southern Mexico.

var. STENOPHRYS.

LACHESIS STENOPHRYS *Cope*, 1875, *Batr. and Rept. Costa Rica*, 152.

Muzzle short, depressed; rostral an equilateral triangle. Crown-scales flat, hexagonal, faintly keeled. A trapezoid plate in front of the large superior preocular. Four rows of scales between labials and orbits. Labials nine, third largest, second low and not bounding the pit. Pit bordered by three plates; upper narrow, in contact with both preoculars; lower wider, above the third labial; anterior above the second labial. Supraciliaries narrow, separated by twelve series of scales. Infralabials thirteen, first large. Submentals one pair, truncate in front, narrowly rounded behind. Scales in 36 rows, ten on each side of the median line with a central tubercle. Ventrals 200. Subcaudals 32 pairs, plus 17 transverse series of small ones under the extremity of the tail, terminal spine well developed.

Brown, with twenty-three reddish-brown rhombs on the median rows; the lateral angles are dark spots on the flank, sometimes isolated. On the middle of the body the rhombs have pale centers, posteriorly they are darker, irregular, confluent into a zigzag band. Tail dark brown, with narrow light cross-bands. Lower surfaces greenish-yellow, except the throat and chin, which are white (in spirits). A black band from the eye above the labials, broken upon the neck into a series of spots. Top of head uniform brown. Total length 0^m, 495; tail 0^m, 50. (Cope.) Sipurio.

TRIGONOCEPHALUS.

Oppel, 1811.

Elongate fusiform, back slightly compressed; head large, distinct from the neck, depressed, triangular, broad behind, pointed in front; muzzle prominent, angular; tail short, tapering to a point. Crown-shields small, scale-like. Eye moderate, pupil vertical. Scales keeled. Anal entire. Subcaudals two-rowed, rarely simple. Mexico to Patagonia.

Subcaudals bifid;	
scales in 27—29 rows	*asper.*
scales in 23—25 rows	*atrox.*
subcaudals entire;	
scales in 27 rows	*affinis.*

TRIGONOCEPHALUS ASPER.

var. *n.* C. LANCEOLATI.

Body long, tapering to head and tail; head large, broad behind, pointed and angular in front; crown flat, covered with small keeled scales. A pair of internasals, in contact behind the rostral; behind these on each side a larger plate rests against nasal, loreal and anteocular, but is separated from the large supraciliary by a small scale. Rostral subquadrangular. Nasal in two parts, anterior larger. Loreal quadrilateral. Anteoculars two; upper much larger, sometimes divided; lower half as long, narrow. Suboculars narrow, fused, separated from the labials by a scale. Postoculars 2—3. Labials seven, posterior four large. Infralabials 10—11. Submentals one pair, not in contact with the mental. Scales keeled, in 27 (27—29) rows. In large specimens the keel of the median rows is swollen, and does not reach the end of the scale.

Reddish-brown, with Y-shaped marks of light color on the flanks, which, when opposed, inclose rhombs of the ground color or lighter. When regularly opposed the pattern resembles that of *Crotalus horridus* or *Lachesis mutus.* Flanks lighter with one or more series of spots near the abdomen and upon its edge. Belly and sides of head yellowish, the former mottled posteriorly, the latter with a brown line from the eye to a point near the angle of the mouth. The specimens described were taken at Obispo, on the Isthmus of Darien, by Dr. Maack. Compared with specimens from Martinique and St. Lucia, they are distinguished by brighter colors and swollen keels. The pattern of markings is similar. The numbers and shapes of labials and other head-plates are the same.

TRIGONOCEPHALUS ATROX.

COLUBER ATROX *Linné*, 1754, *Mus. Ad. Fridr., Tab.* 22, *fig.* 2, *and Gmelin*, 1788, *Syst. Nat.*, 1107.

COPHIAS ATROX *Merrem*, 1820, *Tent. Syst.*, 154.

Body long, moderately slender, tapering to head and tip of tail; head broad behind, pointed in front, crown flat, covered with small keeled scales;

rostral angles sharp; tail short, near one seventh of the total, tapering to a slender extremity. Eye moderate, pupil erect. Anterior portion of the nasal larger. Rostral higher than wide. A pair of small internasals, commonly in contact; a similar shield over each loreal in contact with the former. Labials eight (7—8), separated from the orbit by one or two scales, second entering the pit, posterior small. Infralabials ten, anterior pair large, in contact. Submentals two pairs, posterior smaller, and separated by smaller plates. Scales elongate, keeled, in 25 (23—25) rows, outer a little broader. Ventrals broad, 199—205. Anal entire. Subcaudals 60—71 pairs.

Olivaceous, greenish or yellowish; dark-clouded to uniform yellowish below. With scattered transverse dark-edged bands of brown, sometimes divided along the vertebral row of scales, and tending toward alternation. The variation in respect to marking is very great in this species. Instead of transverse bands some specimens have triangles on the flanks. Others have the bands much broken, sometimes forming dorsal and lateral series of spots more or less irregular. Generally the bands are separated by spaces much wider than themselves. A dark band from the eye to the neck. Light-colored specimens show a lighter border to the spaces between the bands; often the center of the space is dark. Brazil to Central America, possibly to Mexico.

TRIGONOCEPHALUS AFFINIS.

BOTHROPS AFFINIS *Bocourt,* 1868, *Ann. Sci. Nat.,* 201.

Nasal divided; subcaudals simple; second labial not forming the anterior border of the lachrymal fosse; rostral triangular, apex rounded, not separated from the nasal by a row of scales; supraciliary long and narrow. Nine or ten labials, fifth largest, and separated from the orbit by four rows of scales. Back with twenty-three to twenty-five rhomboidal spots.

Resembling *Teleuraspis nummifer*, but distinguished by a more elongate form, the rostral in contact with the nasals, instead of being separate by a single row, the longitudinal development of the supraciliaries, and the greater number of rhomboidal spots. The spot beneath the eye is characteristic. Scales in 27 rows. Guatemala.

TELEURASPIS.

Cope, 1859.

Moderately stout; head large, distinct from the neck, depressed, triangular, broad behind, narrowed in front; muzzle prominent, angular; tail short, tapering to a point. Crown-shields small, scale-like. Eye moderate, pupil vertical. Supraciliary replaced by small scales or with a row at the orbital edge. Scales keeled. Anal entire. Subcaudals entire or bifid.

- Subcaudals paired;
  - scales in 21 rows; an undulating band along the back *undulatus.*
- subcaudals entire;
  - no band behind the eye; with scattered spots of dark color *nigroadspersus.*
  - a band from the eye; with a dorsal series of lozenge-shaped spots *nummifer.*

TELEURASPIS UNDULATUS.

TRIGONOCEPHALUS (ATROPOS) UNDULATUS *Jan*, 1859, *Prodr. Icon. Ophid.*, 32.

Supraciliaries replaced by prominent scales, forming a sort of crest; one in particular is elongate, and constitutes an obtuse little horn. Crown covered by small carinate scales, a series of larger around the rostral angle. Labials twelve, none touching the pit; separated from the orbit by two scales. Infralabials thirteen. Submentals two pairs, posterior small; anterior in contact with three infralabials. Scales keeled, in 21 rows. Ventrals 177. Anal entire. Subcaudals 42 pairs.

Greyish, mixed with brown, an undulating brown band along the back. Flanks with small black spots. Belly greenish-yellow, with small black dots. (Jan.) Mexico.

TELEURASPIS NIGROADSPERSUS.

BOTHROPS (TELEURASPIS) NIGROADSPERSUS *Steindachner*, 1870, *Sitz, Akad. Wien.*, *p.* 348, *Taf. VIII.*

Head broad, depressed. Body compressed; tail short. Nasal divided, over the first labial. Two prominent shields at the outer edge of the large, smooth supraciliary. Rostral angles sharp. Keeled scales on crown and side of head; labials, pit-shields, nasals, and supraciliaries larger, smooth.

Labials nine, third largest, separated from the orbit by two scales, second forming a border to the pit. Scales keeled, in 23 rows. Ventrals 162. Anal entire. Subcaudals 55, entire.

Yellow, with scattered spots or dots on head and body; belly light yellow. Central America to Mexico.

TELEURASPIS NUMMIFER.

ATROPOS NUMMIFER *Ruppell*, 1845, *Museum Senckenbergianum*, 313.
BOTHROPS NUMMIFER *Jan*, 1863, *Elenc. Sist.*, 126.

Stout; head short, triangular, broad behind; tail short, near one eighth of the total. Eye moderate, pupil erect. Crown covered with small carinate scales. Supraciliaries small. Scales of the side of the face small. Scales all keeled, in 25 rows, dorsal keels not reaching the end of the scale. Ventrals 132. Anal entire. Subcaudals 33, entire.

A dorsal series of rhomboidal darker-edged brown spots, sometimes complete and distinct, and sometimes triangular and alternating across the back, but united in such a manner as to form a zigzag series. A series of irregular-shaped black spots on the flank and another series alternating with these on the ends of the ventrals. Posteriorly the borders of the dorsal rhombs unite with each other, and the lateral spots inclosing lighter spaces on the flanks. Ventrals yellowish in front, becoming dark leaden posteriorly spotted with light. Labials, infralabials, chin-shields, and scales below the neck white. A dark band behind the eye, above the hinder labials to the neck. End of tail lighter. (Jan.) Guatemala, Mexico.

ADDITIONS AND CORRECTIONS.

It is three years since the foregoing Synopses and Descriptions were written. In that time additional researches and discoveries have necessitated a number of changes. These can not be made in the text. They appear in the Systematic List given below. The latter corrects the preceding wherever they differ, and expresses my views in regard to value of characters, classification, etc., at the latest date. Such descriptions as are lacking in the earlier work, and any changes in the text that may be found necessary, are placed under their proper heads in the List. In many cases the original diagnosis is somewhat closely followed, changes being made only when really necessary.

At first it was the intention to devote these pages exclusively to Kentucky species. The geographical position of this State, however, being such as to make it a sort of neutral ground, of which none of the species were peculiar to itself, it was seen that it would greatly enhance the value of the work for Kentucky, and for the other States, to increase its scope so as to take in all North America from the Isthmus of Tehuantepec. The descriptions include nearly or quite all the species occurring north of the Isthmus, although a few of them are only stragglers from the southward; the illustrations, with but one or two exceptions, are of those of Kentucky. Whenever possible, individuals showing variations from such as may have been figured or described by others have been selected for illustration, with the purpose of adding to or correcting our knowledge of the species.

NOVEMBER, 1882.

SYSTEMATIC LIST AND SYNONYMY.

OPHIDIA. 1

Brongniart, 1800, Bull. Soc. Philom.

SCOLECOPHIDIA. (Worm Snakes.) 2

Scolecophides Dum. Bibr., 1844, Erp. Gén., VI, 243.

TYPHLOPIDAE. 2

Typhlopoidea Fitz., 1826, Neue Class., pp. 11, 25. *Typhlopsidae* Gray, 1840, Syn. Brit. Mus., — 1845, Cat. Lizards, 130.

TYPHLOPINAE

Typhlops 2

Schneider, 1801, Hist. Amph., II, 339; D. & B., 1844, Erp., VI, 229; Gray, 1845, Cat. Lizards, 130; Jan, 1860, Arch. Zoöl., — 1864, Icon. Text, 7.

Typhlops longissimus 2

Typhlops (*Ophthalmidion*) *longissimum* Jan, 1861, Arch. Zoöl., I, 182, — 1863, Icon. livr. 5, pl. 5, f. 6. *Ophthalmidion longissimum* D. & B., 1844, Erp., VI, 263; Dum., 1852, Cat. Meth., II; Baird & Girard, 1853, Serp., 155.

"North America."

Typhlops perditus 3

Peters, 1869, Monatsb. Berl. Akad., 435.

Orizaba, Mexico.

Typhlops basimaculatus 3

Cope, 1866, Pr. Phil. Acad., 320.

Cordova and Orizaba, Mexico.

Typhlops emunctus sp. n. 3

Central America.

STENOSTOMINAE. 4

Anomalepis 4

Jan, 1861, Arch. Zoöl., 185, — 1863, Sist., 9, — 1864, Icon. Text, 6, — 1857, Ind. Rett. Mus. Milan (Name).

Anomalepis mexicanus 4

Jan, 1861, Arch. Zoöl., 185, — 1861, Icon. livr. 3, pl. 5–6, f. 1, — 1863, Sist., 9, — 1864, Icon. Text, 7.

Mexico.

OPHIDIA—Continued.

Stenostoma 4

Wagler, 1824, Spix Serp. Bras., 68; D. & B., 1844, Erp., VI, 322; Jan, 1861, Arch. per la Zoöl., 186. For Synopsis, page 5, read:

Scales in 15 rows;
  ocular not in contact with the vertebral series;
    infralabials four *dulce*
  ocular in contact with vertebrals *humile*
scales in 14 rows;
  two labials, separated by the ocular;
    oculars not in contact with vertebrals;
      infralabials five *rubellum*
    oculars and vertebrals in contact;
      infralabials five *tenuiculum*
  three labials, two in front of ocular;
    oculars and vertebrals not in contact *myopicum*
scales in 13 rows *phenops*

Stenostoma dulce 5

Rena dulcis B. & G., 1853, Serp., 142; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 100. *Stenostoma dulce* Jan, 1861, Arch. Zoöl., 189, — Icon. livr. 2, pl. 5, 6, f. 5, — 1863, Sist., 15, — 1864, Icon. Text, 36; Cope, 1880, Bull. 20, U. S. Mus., p. 20, — 1875, Checklist, 44.

Texas.

Stenostoma humile. . . . .

Rena humilis B. & G., 1853, Serp., 143. *Stenostoma humile* Cope, 1861, Pr. Phil. Ac., 305 (Name), — 1875, Checklist, 44.

Body very slender and cylindrical; tail short, conical, tapering, not acute, one-fifteenth of the total length. Head less depressed (than *S. dulce*). Eyes and nostril more distinct than in the preceding species (*S. dulce*). The eye-shield in contact with the longitudinal series on top of the head. No supraorbitals. Post parietals much smaller than the parietals. Scales in 15 rows. Scales on the abdomen larger than on the back. Uniform chestnut-brown, lighter beneath.

Valliecetas, Cal. (B. & G.)

Stenostoma rubellum sp. n. . . . .

Long, slender, cylindrical; head indistinct, slightly depressed, muzzle rounded; tail short, thick, ending in a spine which is directed downward. Eyes distinctly visible beneath the ocular shields. Rostral reaching backward as far as to a vertical from the anterior edge of the ocular. Nasal obliquely divided; lower portion narrow, separated from the ocular by a single labial. Oculars reaching the edge of the lip, broadening upward, separated by three small shields on the top of the head, followed by a large labial. A pair of large broad parietals on each side behind the upper half of the ocular and the small supraocular, separated on the vertex by the vertebral series, and the posterior of each pair separated from the labial by a scale-like shield. Nasals separated by the extremity of the rostral and the anterior scale of the dorsal row. Rostral broad, upper extremity rather acute. Infralabials

OPHIDIA—Continued.

five. Scales in 14 rows; ventrals little, if any, larger. Each scale has four angles, and its posterior margin is nearly a semicircle. Back reddish brown; belly reddish white.

Resembles *S. dulce* in coloration, but differs in the number of dorsal rows of scales, complete separation of nasals by the rostral, five infralabials, instead of four, and in having only the anterior parietal in contact with the posterior labial. Total length 8 inches; tail 0.38.

Uvalde, Texas.

STENOSTOMA TENUICULUM sp. n. . . . .

San Luis Potosi, Mexico.

STENOSTOMA MYOPICUM sp. n. . . . .

Tampico, Mexico.

STENOSTOMA PHENOPS . . . .

Cope, 1875, Jour. Phil. Ac., 128, — Checklist, 44.

Tehuantepec; Guatimala.

ONYCHOPHIDIA. (Clawed Snakes.) 7

ERYCIDAE. 7

Erycina Bonap., 1831, Saggio Distrib. Met. An. Vert. *Erycidae* Bonap., 1840, Roy. Acad. Turin, Mem., II; Gthr., 1864, Rept. Brit. Ind., 332.

CHARINA 7

Gray, 1849, Cat. Snakes, 113; B. & G., 1853, Serp., 154. *Wenona* B. & G., 1852, Pr. Phil. Ac., 176, — 1853, Serp., 139. *Pseudoeryx* Jan, 1862, Arch. Natgesch., I, 242, — 1865, Icon., Text, 67. *Lichanura* Cope, 1861, Pr. Phil. Ac., 304.

CHARINA BOTTAE 7

Gray, 1849, Cat., 113; B. & G., 1853, Serp., 154. *Tortrix bottae* Blainv., 1835, Nouv. Ann. Mus., 289, pl. 26, f. 1–1*b*. *Pseudoeryx bottae* Jan, 1863, Sist., 21, — Icon. livr., 3, pl. 2, f. 1, — 1865, Icon., Text, 67.

California to Mexico.

Var. PLUMBEA . . . .

Wenona plumbea B. & G., 1852, Pr. Phil. Ac., 176, — 1853, Serp., 139; Grd., 1858, Wilkes' Exp., Rept., 112, pl. 7, f. 1–7; Jan, 1863, Sist., 21, — 1864, Icon., livr. 3, pl. 2, f. 2, — 1865, Icon., Text, 69. *Wenona isabella* B. & G., 1852, Pr. Phil. Ac., 176, — 1853, Serp., 140; Grd., 1858, Wilkes' Exp., Rept., 113, pl. 7, f. 8–14. *Charina plumbea* Cope, 1861, Pr. Phil., Ac., 305. *Wenona* Bd., 1859, P. R. R. Rep., X, pl. 32, f. 3.

Uniform brownish or leaden. Scales in 45 rows. Ventrals 206+37.

California to Puget Sound.

CHARINA TRIVIRGATA 8

Lichanura trivirgata Cope, 1861, Pr. Phil. Ac., 304; Jan, 1865, Icon., Text, 70. *L. roseofusca* Cope, 1868, Pr. Phil. Ac., 2. *L. myriolepis* Cope, 1868, Pr. Phil. Ac., 2.

Lower California; Mexico.

OPHIDIA—Continued.

BOAEIDAE 8

Boidae Bonap., 1831, Saggio, — 1840, Roy. Acad. Turin.

BOA . . . .

Linn., 1758, Systema, I, 214, — 1766, Syst., I, 373 (Part); Gray, 1825, Ann. Phil., 209; Wagler, 1830, Syst. Amph., 168; D. & B., 1844, Erp., VI, 500.

BOA IMPERATOR 8

Daudin, 1803, Rept., V, 150; D. & B., 1844, Erp., VI, 519; Gray, 1849, Cat. Snakes, 101; Jan, 1857, Ind. Sist. Rett. Mus. Milan, 44, — 1863, Sist., 23, — 1864, Icon., livr. 6, pl. 1, — 1865, Icon., Text, 81; Sumichrast, 1880, Bull. Soc. Zoöl. de France, 179.

Central America and Mexico.

BOA CONSTRICTOR . . . .

Boas constrictor Linn., 1754, Mus. Ad. Fridr., 38. *Boa constrictor* Linn., 1758, Syst., I, 373; Schneider, 1801, Amph., II, 247; Fitz., 1826, Neue Class., 54; Wagl., 1830, Syst., 163; D. & B., 1844, Erp., VI, 507; Gray, 1849, Cat. Sn., 100; Jan, 1864, Icon., livr. 5, pl. 2, f. 2.

Brazil to Central America.

Var. ISTHMICA 9

Central America.

BOA MEXICANA (Rapp) 10

Boa diviniloquax var. *mexicana* Jan, 1863, Sist., 23, — 1864, Icon., livr. 5, pl. 4, f. 1, — 1865, Icon., Text, 82.

CHILABOTHRUS . . . .

Dum. Bibr., 1844, Erp., VI, 562.

Body stout, slightly compressed; neck smaller; head broad, depressed; tail rather short. Nostrils lateral, anterior. Eyes small, pupil vertical. Anterior teeth larger. Labials imbricate, without pits. Crown-shields large, irregular. Scales smooth, flat. Subcaudals simple. Claws distinct.

CHILABOTHRUS INORNATUS . . . .

D. & B., 1844, Erp., VI, 563; Jan, 1863, Sist., 24, — 1864, Icon., livr. 6, pl. 5, f. 1. *Boa inornata* Reinh., 1843, Dansk. Vid. Selsk., pl. 21–23.

Body stout, slightly compressed; head distinct, crown flat, snout broad; tail short, prehensile, rather thick at the extremity. Rostral large, pentangular, wider at the suture with the labial and nasal. Nasal divided in three—upper portions largest and meeting between internasals and rostral, or in two—anterior part much larger and reaching from the anterior labial to the opposite nasal. Internasals and prefrontals large, subequal or subdivided. Frontal and supraciliaries large, the former often dissected. Parietals irregular, becoming scale-like posteriorly. Loreal large, elongate, sometimes supplemented by small shields. Anteoculars two, upper larger. Postoculars usually four. Temporals scale-like. Labials commonly eleven, the sixth touching the eye. Infralabials about thirteen, anterior four or five broad, anterior pair meeting behind the mental. Mental furrow deep. Submentals small. Scales smooth, flat, in 36 to 40 rows, outer and vertebral broader. Ventrals 266 to 271. Subcaudals 36 to 52, entire. Yellowish, reddish, or greyish brown, light to dark, punctulate and clouded with darker, with irregular transverse badly defined bands of darker, which are often confluent into more or less distinct longitudinal bands on the sides of the neck. Belly olivaceous, flecked with lighter. Tail sometimes transversely banded. Some specimens are nearly uniform in coloration, very light to almost uniform black. The specimens described were large ones from Porto Rico. Reinhardt's specimens had 264 to 271 ventrals, and 67 to 69 subcaudals. The tail is shorter in the adult, and commonly the tip is imperfect.

West Indies; (?) Central America; (?) Mexico.

ACACOPHIDIA. (Non-venomous Snakes.) 11

COLUBRIDAE. 11

Bonap., 1831, Saggio, etc.

DIPSADINAE 11

LEPTOGNATHUS 12

Dum., 1852, Mem. Acad., 23, p. 467; D. & B., 1854, Erp., VII, 473; Gthr., 1858, Cat., 177.

LEPTOGNATHUS FASCIATUS 12

Tropidodipsas fasciata Gthr., 1858, Cat., 181. *Leptognathus philippii* Jan, 1863, Sist., 101, — 1870, Icon., livr. 37, pl. 5, f. 1. *L. fasciata* Cope, 1868, Pr. Phil. Ac., 137.

Mexico; Central America.

LEPTOGNATHUS DUMERILII (?) 13

Jan, 1863, Sist., 101, — 1870, Icon., livr. 37, pl. 5, f. 2.

Mexico.

LEPTOGNATHUS NEBULATUS 13

Gthr., 1858, Cat., 177; Cope, 1868, Pr. Phil. Ac., 136.

Coluber nebulatus Linn., 1754, Mus. Ad. Fridr., 32, pl. 24, f. 1, — 1758, Syst., I, 222, — 1766, Syst., I, 383; Weigel, 1782, Abb. Hall. Nat. Ges., I, 32; Mus. Linck, 1783, I, 75; Gmel., 1788, Syst. Linn., I, 1107; Shaw, 1802, Zoöl., III, 476; Latr., 1802, Rept., IV, 164; Daud., 1803, Rept., VI, 435; Merr., 1820, Syst., 104. *Cerastes nebulatus* Laur., 1768, Synops., 83. *Sibon nebulatus* Fitz., 1826, Neue Class., 60. *Dipsas nebulata* Boie, 1827, Isis, XX, 550; Schl., 1837, Essai, I, 162, II, 275, pl. 11, f. 14, 15; DeFil., 1840, Cat. Serp. *Petalognathus nebulatus* Dum., 1852, Mem. Acad., XXIII, 466; D. & B., 1854, Erp., VII, 464; Martens, 1856, Mus. Berl., 27.

Seba, 1734, Thesaur., I, 22, pl. 14, f. 4, — 1735, pl. 29, f. 3; Scheuch., 1735, Phys. Sacr., IV, 1532, pl. 748, f. 8; Linn., 1749, Amoen. Acad., I, 304; Daub., 1771, Dict. Anim., 657, 679; LaC., 1789, Quad. Ovip. & Serp., II, 271, 307; Bonnat., 1789, Ophiol. 36, pl. 20, f. 38; Merr., 1790, Beitr., I, 31, pl. 8; Bechst., 1802, Ueb. LaC. Nat., IV, 39, 96, pl. 4, f. 2.

Brazil to Mexico; West Indies (Gthr.)

OPHIDIA—Continued.

Leptognathus dimidiatus 14

Guenther, 1872, Ann. Mag. Nat. Hist., IX, 31.
Mexico.

Leptognathus brevis (?) . . . .

Dum., 1852, Mem. Acad., XXIII, 467; D. & B., 1854, Erp., VII, 476; Cope, 1868, Pr. Phil. Acad., 136.
Mexico.

Dipsas 14

Laur., 1768, Syst. Rept., 89; Gthr., 1858, Cat. Col. Snakes, 169.

(Himantodes.)

Dipsas cenchoa 14

Max., 1825, Beitr. Brazils, I, 396; Fitz., 1826, Neue Class., 59; Boie, 1827, Isis, 560; Wagl., 1830, Amph., 181; Gthr., 1858, Col. Snakes, 174. *Coluber cenchoa* Linn., 1758, Syst. Nat., I, 226, — 1766, Syst. Nat., I, 389; Gmelin, 1788, Syst. Nat. Linn., I, 1118; Shaw, 1802, Gen. Zoöl., III, 475; Latr., 1802, Hist. Rept., IV, 129; Daud., 1803, Rept., VI, 283; Kuhl, 1820, Beitr., 88. *Bungarus cencoalt* Oppel, 1810, Ann. Mus. Hist. Nat., XVI, 392, — 1811, Ord. Fam. Gatt. Rept., 70. *Dipsas weigelii* Fitz., 1826, Neue Class., 59; Schlegel, 1837, Ess. Phys. Serp., I, 162, II, 278, pl. 11, f. 19–20; DeFil., 1840, Cat. Serp.; Fitz., 1843, Syst. Rept., 27. *Himantodes cenchoa* Dum. Bibr., 1854, Erp. Gen., VII, 1065; Mart., 1856, Mus. Berl., 31; Jan, 1863, Elenc. Sist., 102, — 1871, Icon., livr. 38, pl. 2, f. 1. *Natrix cenchoa* Merr., 1820, Amph., 114.

Seba, 1735, Thesaur., II, Tab. 15, f. 2, 3; Scheuchser, 1735, Phys. Sacr., IV, Tab. 678, f. 3; Linn., 1749, Amoen. Acad., I, 306; Daub., 1771, Dict. Encycl., 601; Weigel, 1782, Berl. Nat. Ges., III; LaC., 1789, Quad. Ovip., II, 316; Bonn., 1789, Encycl. Meth., Oph., 35, pl. 29, f. 60; Bechst., 1802, Ueb. LaC. Natg., IV, 115.
Mexico to Brazil.

Dipsas leucomelas 15

Cope, 1861, Pr. Phil. Ac., 296.
Vera Cruz, Mexico.

Sibon 15

Fitz., 1826, Neue Class., 60; Cope, 1860, Pr. Phil. Ac., 266.

Sibon biscutatum 16

Dipsas biscutata D. & B., 1854, Erp. Gen., VII, 1153.

Dipsadomorphus biscutatus Gthr., 1858, Col. Serp., 176. *Eteirodipsas biscutata* Jan, 1863, Sist., 105, — 1872, Icon., livr. 39, pl. 1, f. 3. *Lycodon lyrophanes* Cope, 1860, Pr. Ac. Phil., 343. *Trimorphodon biscutatus* Cope, 1869, Pr. Am. Phil. Soc., 152. *Trimorphodon lyrophanes* Cope, 1861, Pr. Phil. Ac., 297. Central America to Mexico.

Var. latifasciatum 17

Dipsas biscutata var. *latifascia* Peters, 1869, M. B. Berl. Acad., 877.
Pueblo, Mexico.

Sibon upsilon . . . .

Trimorphodon upsilon Cope, 1879, Pr. Am. Phil. Soc., 152.

Loreals 3. Oculars 3—3. Temporals 3+3+3. Blotches forming transverse bands. Guadalaxara, Western Mexico.

OPHIDIA—Continued.

SIBON ANNULATUM . . . .

Fitz., 1826, Neue Class., 60; Cope, 1860, Pr. Phil. Ac., 266.

Coluber annulatus Linn., 1754, Mus. Ad. Fridr., pl. 8, f. 2, — 1758, Syst., I, 224, — 1766, Syst., I, 386; Mus. Linck., I, No. 76; Gmelin, 1788, Syst. Linn., I, 1111; Shaw, 1802, Gen. Zoöl., III, 490; Latr., 1802, Rept., IV, 127; Daud., 1803, Rept., VI, 369; Kuhl, 1820, Beitr., 85; Merr., 1820, Amph., 111, — 1821, Beitr., fasc. 3, p. 25, pl. 3–4. *Dipsas annulata* Schleg., 1837, Ess. Phys., I, 165, II, 294; DeFil., 1840, Cat. Serp.; D. & B., 1854, Erp. Gen., VII, 1141; Martens, 1856, Mus. Berl., 32. *Lycodon annulatus* Boie, 1827, Isis, XX, 527. *Leptodeira annulata* Fitz., 1843, Syst., 27; Gthr., 1858, Cat., 166. *Eteirodipsas annulata* Jan, 1863, Sist., 105.

Seba, 1735, II, pl. 41, f. 3, pl. 57, f. 1, pl. 71, f. 3; Scheuchser, 1735, Phys. Sacr., IV, pl. 652, f. 2; Knorr, 1767, Delic. Surin. Nat., II, pl. 6, f. 2; Daub., 1771, Dict. Encycl., 591; LaC., 1789, Quad. Ovip., II, 312; Bechst., 1802, Ueb. LaC., IV, 107, pl. 13, f. 1; Merr., 1790, Beitr., pt. I, pl. 11; Herm., 1804, Obs. Zoöl., I, 285.

Mexico to Brazil.

Var. SEPTENTRIONALE 17

Dipsas septentrionalis Kenn., 1859, Mex. Bound. Surv., II, 16, pl. VIII, f. 1; Bd., 1859, P. R. R. Rep., X, pl. 25, f. 18. *Sibon septentrionalis* Cope, 1860, Pr. Phil. Ac., 226. *Sibon annulatum* subsp. *septentrionale* Cope, 1875, Checklist, 38. *Eteirodipsas annulata* var. *septentrionalis* Jan, 1872, Icon., livr. 39, pl. 1, f. 2.

Texas; Arizona; Mexico.

SIBON TORQUATUM 18

Leptodeira torquata Gthr., 1860, Ann. Mag. *Hipsiglena torquata* Cope, 1861, Pr. Phil. Ac., 302.

Nicaragua.

Var. PACIFICUM . . . .

Leptodeira pacifica Cope, 1868, Pr. Phil. Ac., 310.

Oculars 2—2. Loreal higher than long. Labials 7, third and fourth in orbit. Temporals 1+2. Scales in 19 rows, biporous, all nearly equal. Ventrals 164. Anal bifid. Subcaudals 61 pairs. Back brownish, with four series of blackish brown very small spots, of which the median pair forms usually a short cross-bar by their union. A broad black bar across the nape; a short brown line behind each eye, and a number of dots on the crown. Below uniform cream color.

Mazatlan, Mexico.

Var. PERSONATUM . . . .

Leptodeira personata Cope, 1868, Pr. Phil. Ac., 310.

Oculars 1—2. Loreal as high as long. Labials 8, fourth and fifth in orbit. Temporals 1+2. Scales in 23 rows, biporous. Ventrals 173; anal divided. Cream color, with broad black cross bands on the dorsal region, 23 between nape and vent. Top of head black. A broad yellowish collar.

Mazatlan, Mexico.

SIBON DISCOLOR 18

Leptodeira discolor Gthr., 1860, Pr. Zoöl. Soc. Lond., 317.

Oaxaca, Mexico.

OPHIDIA—Continued.

SCYTALINAE 18

Scytaliens D. & B., 1854, Erp. Gen., VII, 988. *Scytalidae* Gthr., 1858, Cat. Col., 185.

Oxyrhopus 18

Wagler, 1830, Amph., 185.

Oxyrhopus cloelia 19

Guenther, 1858, Cat. Col. Sn., 189. *Coluber cloelia* Daud., 1803, Rept., VI, 330, pl. 78. *Natrix cloelia* Merr., 1820, Amph., 98. *Cloelia daudinii* Fitz., 1826, Neue Class., 55, No. 2. *Cloelia occipitalis* Wagler, 1830, Amph., 187. *Lycodon cloelia* Schl., 1837, Ess. Phys., I, 143, II, 114. *Deiropeda cloelia* Fitz., 1843, Syst., 25. *Brachyryton cloelia* D. & B., 1854, Erp. Gen., VII, 1007.

Central America; Mexico (?).

Oxyrhopus doliatus 19

Dum. Bibr., 1854, Erp. Gen., VII, 1020; Gthr., 1858, Cat., 192.

Central America to Brazil; Mexico (?).

DENDROPHINAE 20

Dendrophidae Gthr., 1858, Cat., 142.

Leptophis 20

Bell, 1825, Zoöl. Jour., 329.

Leptophis mexicanus 20

Dum. Bibr., 1854, Erp. Gen., VII, 536; Jan, 1863, Sist., 84, — 1878, Icon., livr. 49, pl. 6, f. 4.

Ahaetulla mexicana Gthr., 1858, Cat., 154. *Thrasops mexicanus* Cope, 1860, Pr. Phil. Ac., 557.

Mexico.

Oxybelis 21

Wagler, 1830, Amph., 183.

Oxybelis aeneus 21

Wagl., 1830, Amph., 183; Fitz., 1843, Syst., 27. D. & B., 1854, Erp. Gen., VII, 819; Martens, 1856, Mus. Berl., 31. *Dryinus aeneus* Wagl., 1824, Spix Serp. Bras., 12, pl. III; Boie, 1827, Isis, 546. *Dryiophis aeneus* Cuv., 1829, Regn. An., II, 83. *Coluber acuminatus* Wied., 1830, Abbild. Nat. Bras., Lief. 14, pl. I, — 1825, Beitr., 322. *Dryiophis aurata* Schleg., 1837, Essai, pl. 10, f. 16–18. *Dryinus auratus* Bell, 1825, Zoöl. Jour., II, pl. 12. *Dryiophis acuminata* Gthr., 1858, Cat., 156.

Mexico to Brazil.

NATRICINAE 21

Natricidae Gthr., 1858, Cat., 50.

Tropidonotus 22

Kuhl, 1826, Isis, 205; Boie, 1827, Isis, 518; Wagl., 1830, Amph., 179; Schleg., 1837, Ess., 296; D. & B., 1854, Erp. Gen., VII, 594; Gthr., 1858, Cat., 59.

(Chilopoma.)

Tropidonotus rufipunctatus 23

Chilopoma rufipunctatum (Cope) Yarrow, 1875, Wheeler's Surv., V, 543, pl. XX, f. 1; Cope, 1875, Checklist, 40.

Southern Arizona.

OPHIDIA—Continued.

(EUTAENIA.)

TROPIDONOTUS SAURITA (Ribbon Snake). 23

Schleg., 1837, Essai, I, 169, II, 327; D. & B., 1854, Erp., VII, 585; Mart., 1856, Mus. Berl., 25; Gthr., 1858, Cat., 72; Jan, 1863, Sist., 69, — 1865, Arch. Zoöl., 212, — 1868, Icon., livr. 26, pl. 2, f. 1; Allen, 1868, Pr. B. N. H. Soc., 180. *Coluber saurita* Linn., 1766, Syst., I, 385; Gmel., 1788, Syst. Linn., I, 1109; Harl., 1827, Jour. Phil. Ac., V, 352, — 1835, Med. Res., 115; Shaw, 1802, Zoöl., III, 532; Fitz., 1826, Neue Class., 59; Daud., 1803, Rept., VII, 81; Bonnat., 1789, Ophiol., 58; Storer, 1839, Mass. Rept., 229; Thomps., 1842, Hist. Vermont, 115. *Leptophis sauritus* Holbr., 1842, Herp., IV, 21, pl. 4; DeK., 1842, N. Y. Fauna, Rept., 47, pl. 11, f. 24. *Eutaenia saurita* B. & G., 1853, Serp., 24; Bd., 1854, Serp. N. Y., 14, — 1859, P. R. R. Rep., X, pl. 26, f. 19; Yarrow, 1875, Wheeler's Rep., V, pp. 545, 546.

Ribbon Snake Catesby, 1743, Carol., II, 50.

Mississippi Valley to the Atlantic.

Var. SACKENII . . . .

Eutaenia sackenii Kenn., 1859, Pr. Phil. Ac., 98; Yarr., 1875, Wheeler's Rep., V, pp. 545, 547; Cope, 1877, Pr. Am. Phil. Soc., 64.

Slender. Back olive black, to edge of abdomen. Lateral stripe greenish yellow, on third and fourth rows. No dorsal stripe. Belly greenish.

Florida.

Var. FAIREYI . . . .

Eutaenia faireyi B. & G., 1853, Serp., 25; Bd., P. R. R. Rep., X, pl. 26, f. 20; Yarr., 1875, Wheeler's Rep., V, pp. 545, 547; Cope, 1880, Bull. 20, U. S. Mus., 23. *Tropidonotus saurita* var. *faireyi* Jan, 1863, Sist., 71; Cooper, 1860, P. R. R. Rep., XII (2), 299, pl. 13, 14.

Stouter than *T. saurita.* Scales in 19 rows. Ventrals 168 to 178. Subcaudals 112—115. Back to edge of abdomen blackish brown. With three longitudinal stripes, outer on third and fourth rows.

Minnesota and Wisconsin Southward.

Var. PROXIMUS . . . .

Coluber proximus Say, 1823, Long's Exp., I, 187. *Tropidonotus sauritus* var. *proximus* Jan, 1863, Sist., 70. *Eutaenia proxima* B. & G., 1853, Serp., 25, — 1854, Marcy's Exp., 191, pl. 2; Bd., 1859, P. R. R. Rep., X, pl. 26, f. 21; Yarr., 1875, Wheeler's Rep., V, pp. 545, 547; Cope, 1880, Bull. 20, U. S. Mus., 20; Sumichrast, 1881, Bull. Soc. Zoöl. de France, 182; Coues & Yarrow, 1878, Hayd. Rep., IV, 280. *E. macrostemma* Kenn., 1860, Pr. Phil. Ac., 331; Cope, 1866, Pr. Phil. Ac., 307; Yarr., 1875, Wheeler's Rep., V, 548. *E. megalops* Kenn., 1860, Pr. Phil. Ac., 330; Yarr., 1875, Wheeler's Rep., V, pp. 545, 547. *E. flavilabris* Cope, 1866, Pr. Phil. Ac., 306; Yarr., 1875, Wheeler's Rep., V, 547.

Arkansas and Texas to Mexico.

OPHIDIA—Continued.

TROPIDONOTUS SIRTALIS (Garter Snake) 24

Coluber sirtalis Linn., 1758, Syst., I, 222, — 1766, Syst., I, 383; Gmel., 1788, Syst. Linn., I, 1107; Shaw, 1802, Zoöl., III, 535; Merr., 1820, Syst., 132; Harl., 1827, Jour. Phil. Ac., 352; Storer, 1839, Mass. Rept., 221. *Eutaenia sirtalis* B. & G., 1853, Serp., 30; Bd., 1859, P. R. R. Rep., X, pl. 26, f. 23; Yarr., 1875, Wheeler's Rep., V, 550; Cope, 1877, Pr. Am. Phil. Soc., 64. *Tropidonotus sirtalis* Holbr., 1842; Herp., IV, 41, pl. 11; Jan, 1863, Sist., 69, — 1865, Arch. Zoöl., 210. *T. ordinatus* var. B., Gthr., 1858, Cat., 74. *T. bipunctatus* Schleg., 1837, Essai, I, 168, II, 320; D. & B., 1854, Erp., VII, 582. *T. kennicotti* Jan, 1863, Sist., 70, — 1865, Arch. Zoöl., 216. *T. sirtalis* var. *dorsalis* Jan, 1863, Sist., 69. *Eutaenia dorsalis* B. & G., 1853, Serp., 31; Bd., 1859, P. R. R. Rep., X, pl. 26, f. 2; Yarr., 1875, Wheeler's Rep., V, 550. *E. sirtalis* subsp. *dorsalis* Yarr., 1875, Wheeler's Rep., V, 554. *E. sirtalis* var. *obscura* Cope, 1880, Bull. 20, U. S. Mus., 23. *Tropidonotus sirtalis* var. *dorsalis* Jan, 1867, Icon., livr. 25, pl. 4, f. 1. *E. cyrtopsis* subsp. *ocellata* Cope, 1880, Bull. 20, U. S. Mus., 22. New England to the Mississippi Valley.

Var. ORDINATUS 25

Coluber ordinatus Linn., 1766, Syst., I, 379; Gmel., 1788, Syst. Linn., I, 1097; Harl., 1827, Jour. Phil. Ac., V, 349. *Tropidonotus ordinatus*, Holbr., 1842, Herp., IV, 45, pl. 12; Gthr., 1858, Cat., 73. *Eutaenia ordinata* B. & G., 1853, Serp., 32; Bd., 1859, P. R. R. Rep., X, pl. 26, f. 24; Yarr., 1875, Wheeler's Rep., V, 551. *Spotted Ribbon Snake* Catesby, 1743, Carol, II, pl. 51 and 53.

Coast Region, Nova Scotia to Georgia; Alabama.

Var. RADIX . . . .

Tropidonotus sirtalis var. *radix* Jan, 1863, Sist., 69, — 1865, Arch. Zoöl., 211. *Eutaenia radix* B. & G., 1853, Serp., 34; Bd., 1859, P. R. R. Rep., X, pl. 26, f. 25, pl. 34, f. 5; Cooper, 1860, P. R. R. Rep., XII, (2), 299; Yarrow, 1875, Wheeler's Rep., V, 548; Coues & Yarrow, 1878, Hayden's Rep., IV, 277. *E. radix twiningii* Coues & Yarrow, 1878, Hayd. Rep., IV, 279. *Thamnophis haydeni* Cope, 1862, Hayd., Trans. Am. Assoc., XII, 177. *Eutaenia haydeni* Kenn., 1860, Coop. P. R. R. Rep., XII (2), 298, pl. 14; Jan, 1865, Arch. Zoöl., 212.

Scales in 19 rows, outer broad. Black, with three narrow yellow lines, or dark brown, with the lines and with series of irregular spots on the flanks. Lateral yellow lines on the third rows. Ventrals 153. Subcaudals 51 pairs.

Northern part of Mississippi basin, Michigan to Rocky Mountains.

Var. MARCIANA 25

Eutaenia marciana B. & G., 1853, Serp., pp. 36, 156, — 1854, Marcy's Exp., 192, pl. 3; Bd., 1859, P. R. R. Rep., X, pl. 26, f. 26; Yarrow, 1875, Wheeler's Rep., V, pp. 549, 555; Cope, 1880, Bull. 20, U. S. Mus., 22; Sumichrast, 1881, Bull. Soc. Zoöl. Fr., 182. *Tropidonotus marciana* Jan, 1863, Sist., 70, — 1865, Arch. Zoöl., 215. (?) *T. sirtalis* Peters, 1869, Mb. Brl. Akad., 877. Kansas to Texas and Mexico.

OPHIDIA—Continued.

Var. PARIETALIS 25

Coluber parietalis Say, 1823, Long's Exp., I, 186. *Tropidonotus parietalis* Hall., 1856, Pr. Phil. Ac., 248. *Tropidonotus sirtalis* var. *parietalis* Jan, 1863, Sist., 69. *Eutaenia sirtalis parietalis* Coues & Yarrow, 1878, Hayd. Rep., IV, 276. *Eutaenia parietalis* B. & G., 1853, Serp., 28. *E. ornata* Bd., 1859, P. R. R. Rep., X, pl. 26, f. 22; Cope, 1866, Pr. Phil. Ac., 305, 306, — 1875, Checklist, 41; Yarr., 1875, Wheel. Rep., V, 550, 553.

Missouri basin and westward to Utah.

Var. VAGRANS . . . .

Eutaenia vagrans B. & G., 1853, Serp., 35; Grd., 1858, Expl. Exp. Herp., 154, pl. XIV, f. 5–10; Cooper, 1860, P. R. R. Rep., XII (2), 297; Cope, 1866, Pr. Phil. Ac., pp. 305, 307, vars.; Yarrow, 1875, Wheeler's Rep., V, 548; Coues & Yarrow, 1878, Hayd. Rep., IV, 274; Coues, 1875, Wheeler's Rep., V, 614; Baird, 1859, P. R. R. Rep., X, Rept., 19, pl. 17. *Eutaenia vagrans vagrans* Yarrow, 1875, Wheel. Rep., V, 551. *E. angustirostris* Kenn., 1860, Pr. Phil. Ac., 332; Yarrow, 1875, Wheel. Rep., V, 548. *E. vagrans* subsp. *angustirostris*, Yarr., 1875, Wheel. Rep., V, 554. *Tropidonotus vagrans* Jan, 1863, Sist., 70, — 1865, Arch. Zoöl., 215. *Eutaenia couchii* (Kenn.) Bd., 1859, P. R. R. Rep., X, Rept., 10; Yarr., 1875, Wheel. Rep., V, 549.

Scales in 21 rows. Back brownish, with light vertebral line; belly slate color. Two series of small black spots, 95 to 105, on each side. Ventrals 161 to 179. Subcaudals 70 to 90.

Rocky Mountains to the Sierras; Sonora.

Var. COLLARIS 25

Tropidonotus collaris Jan, 1863, Sist., 69, — 1867, Icon., livr. 25, pl. 5, 2.

Southern Mexico; Panama.

Var. LEPTOCEPHALUS . . . .

Tropidonotus sirtalis var. *leptocephala* Jan, 1863, Sist., 69, — 1867, Icon., livr. 25, pl. 4, f. 2. *Eutaenia leptocephala* B. & G., 1853, Serp., 29; Bd., 1859, P. R. R. Rep., X, pl. 36, f. 2; Girard, 1858, Expl. Exp., Herp., 151, pl. XII, f. 7–13; Coop., 1860, P. R. R. Rep., XII (2), 297; Jan, 1865, Arch. Zoöl., 211; Yarr., 1875, Wheel. Rep., V, 550.

Scales in 19 to 17 rows, outer smooth. Orbitals 2—3. Light olive brown, with two series (about 130) of small black spots on each flank. Lateral stripes obsolete. Scales black at base. Ventrals 140 to 150. Subcaudals 57 to 66.

Oregon

Var. INFERNALIS 25

Coluber infernalis Blainv., 1834, Nouv. Ann. Mus., III, 59, pl. XXVI, f. 3. *Eutaenia infernalis* B. & G., 1853, Serp., 26; Grd., 1858, Expl. Exp., Herp., 148, pl. XIV, f. 11–16; Bd., 1859, P. R. R. Rep., X, Rept., 10; Yarr., 1875, Wheel. Rep., V, 550. *Tropidonotus saurita* var. *infernalis* Jan, 1863, Sist., 70. *Eutaenia pickeringii* B. & G., 1853, Serp., 27; Grd., 1858, Expl. Exp., 150, pl. XIII, f. 14–20; Bd.,

OPHIDIA—Continued.

1859, P. R. R. Rep., X, pl. 36, f. 3; Coop., 1860, P. R. R. Rep., XII (2), 296; Yarr., 1875, Wheel. Rep., V, 550; Coues & Yarr., 1875, Hayd. Rep., IV, 281. *Trop. sirtalis* var. Jan, 1863, Sist, 69, — 1865, Arch. Zoöl., 211. *Eutaenia cooperi* Kenn., 1859, Pr. Phil. Ac.; Coop., 1860, P. R. R. Rep., XII (2), 296; Yarr., 1875, Wheel. Rep., V, 551. *Trop. sirtalis* var. *cooperi* Jan, 1863, Sist., 69, — 1865, Arch. Zoöl., 212. *Eutaenia elegans* B. & G., 1853, Serp., 34; (Kenn.) Bd., 1859, P. R. R. Rep., X, Rept., 10; Yarr., 1875, Wheel. Rep., V, 549. *Trop. elegans* Jan, 1863, Sist., 70, — 1865, Arch. Zoöl., 214. *E. cyrtopsis* Kenn., 1860, Pr. Phil. Ac., 333; Cope, 1866, Pr. Phil. Ac., 306; Yarr., 1875, Wheel. Rep., V, 550; Cope, 1880, Bull. 20, U. S. Mus., 23. *Thamnophis cyrtopsis* var. *cyclides* Cope, 1860, Pr. Phil. Ac., 299. *E. ordinoides* B. & G., 1853, Serp., 33; Grd., 1858, Expl. Exp., Herp., 153, pl. 14, f. 1–4; Bd., 1859, P. R. R. Rep., X, pl. 26, f. 3.; Yarr., 1875, Wheel. Rep. V, 548. *Tropidonotus ordinoides* B. & G., 1852, Pr. Phil. Ac., 176. *T. sirtalis* var. *ordinoides* Jan, 1863, Sist., 69, — 1865, Arch. Zoöl., 211. *Trop. concinnus* Hall., 1852, Pr. Phil. Ac., 182. *Eut. concinna* B. & G., 1853, Serp., 146; Bd., 1859, P. R. R. Rep., X, Rept., 10; Coop., 1860, P. R. R. Rep., XII (2), 298; Yarr., 1875, Wheel. Rep., V, 549. *E. hammondi* Kenn., 1860, Pr. Phil. Ac., 332; Yarr., 1875, Wheel. Rep., V, 549. *Trop. hammondi* Jan, 1863, Sist., 70, — 1865, Arch. Zoöl., 215. *Eutaenia atrata* (Kenn.) Coop., 1860, P. R. R. Rep., XII (2), 296; Yarr., 1875, Wheel. Rep., V, 551. *Trop. sauritus* var. Jan, 1863, Sist., 70, — 1865, Arch. Zoöl. *Eut. sumichrasti* Cope, 1866, Pr. Phil. Ac., 306; Yarr., 1875, Wheel. Rep., V, 547. *Thamnophis scalaris* Cope, 1860, Pr. Phil. Ac., 369. *Eutaenia scalaris* Cope, 1866, Pr. Phil. Ac., 306; Yarr., 1875, Wheel. Rep., V, 549. *Eutaenia phenax* Cope, 1868, Pr. Ac. Phil., 134; Yarr., 1875, Wheel. Rep., V, 549. (?) *Trop. scaliger* Jan, 1863, Sist., 70. (?) *Trop. glaphyros* Jan, 1863, Sist., 70. *T. ruficeps* Peters, 1869, Mb. Brl. Akad., 877.

California to Mexico.

Var. QUADRISERIALIS. . . . .

Tropidonotus quadriserialis Fischer, 1879, Verh. Nat. Ver. Hamb., 82.

Labials 8. Infralabials 10. Orbitals 1—3. Scales in 19 rows, keeled. Ventrals 149. Anal bifid. Subcaudals 79 pairs. Olivaceous, with four rows of small black spots.

Mazatlan, Mexico.

(NERODIA.)

TROPIDONOTUS SIPEDON (Water Snake) 25

Coluber sipedon Linn., 1758, Syst., I, 219, — 1766, Syst., I, 379; Gmel., 1788, Syst. Nat. Linn., I, 1098; Shaw, 1802, Zoöl., III, 496; Merr., 1820, Syst., 124; Harl., 1827, Jour. Phil. Ac., 351, — 1835, Med. Res., 114; Storer, 1839, Rept. Mass., 228; Thompson, 1842, Hist. Vermont, 118. *Tropidonotus sipedon* Holbr., 1842, Herp., IV, 29, pl. VI; Dum. Bibr., 1854, Erp., VII, 568. *Nerodia sipedon* B. & G., 1853, Serp., 38 Baird, 1854, N. Y. Serp., 16, — 1859, P. R. R. Rep., X, pl. 27, f. 27.

OPHIDIA—Continued.

Tropidonotus fasciatus var. Jan, 1863, Sist., 71; *Trop.* (*Nerodia*) *sipedon* Jan, 1865, Arch. Zoöl., 222. *Coluber fasciatus* Linn., 1766, Syst., I, 378; Gmel., 1788, Syst. Nat. Linn., I, 1094; Holbr., 1838, Herp., I, 93, pl. 20. *Nerodia fasciata* B. & G., 1853, Serp., 39; Bd., 1859, P. R. R. Rep., X, pl. 34, f. 4. *Tropidonotus fasciatus* Schleg., 1837, Essai, I, 169, II, 323, pl. 12, f. 16, 17; Holbr, 1842, Herp., IV, 25, pl. V; D. & B., 1854, Erp., VII, 566; Gthr., 1858, Cat., 76; Jan, 1863, Sist., 71, — 1868, Icon., livr. 26, pl. 3, f. 2; Cope, 1877, Pr. Am. Phil. Soc., 64, — 1880, Bull. 20, U. S. Mus., 22; Mart., 1856, Mus. Berl., 24. *Trop. niger* Holbr., 1842, Herp., IV, p. 37, pl. 9; D. & B., 1854, Erp., VII, 572. *Nerodia niger* B. & G., 1853, Serp., 147; Bd., 1859, P. R. R. Rep., X, pl. 27, f. 31. *Coluber porcatus* Harl., 1827, Jour. Phil. Ac., 356. *Nerodia couchii* Kenn., 1860, Pr. Phil. Ac., 335. *Tropidonotus couchii* Cope, 1860, Pr. Ac. Phil., 342. *Nerodia agassizii* B. & G., 1853, Serp., 41. *Tropidonotus obliquus* Hall., 1856, Pr. Phil. Ac., 248. *Tropidonotus rhombifer* Jan, 1863, Sist., 71, — 1868, Icon., livr. 26, pl. 4, f. 2. *Coluber pœcilogaster* Max., 1839, Reise Nord. Amer., 106. *Tropidonotus sipedon woodhousei* Cope, 1880, Bull. 20, U. S. Mus., 22.

Mississippi Valley to Maine.

Var. ERYTHROGASTER 26

Coluber erythrogaster Holbr., 1838, Herp., II, 91, pl. 19. *Tropidonotus erythrogaster* Holbr., 1842, Herp., IV, 33, pl. VII; D. & B., 1854, Erp., VII, 570. *Nerodia erythrogaster* B. & G., 1853, Serp., 40; Bd., 1859, P. R. R. Rep., X, pl. 27, f. 28. Copper-belly Snake, Catesby, 1743, Carol., II, p. 46, pl. 46.

Southeastern States.

Var. RHOMBIFER 26

Nerodia rhombifer B. & G., 1853, Serp., 147, 42; Bd., 1859, P. R. R. Rep., X, pl. 34, f. 2. *Tropidonotus rhombifer* 1852, Pr. Phil. Ac., 177; Cope, 1861, Pr. Phil. Ac., 298, — 1880, Bull. 20, U. S. Mus., 22. *Nerodia woodhousei* B. & G., 1853, Serp., 42; Bd., 1859, P. R. R. Rep., X, pl. 34, f. 3. *Tropidonotus woodhousei* Cope, 1860, Pr. Phil. Ac., 342; Jan, 1863, Sist., 71, — 1868, Icon., livr. 26, pl. 4, f. 1. *Nerodia holbrookii* B. & G., 1853, Serp., 43; Bd., 1859, P. R. R. Rep., X, pl. 27, f. 30. *Tropidonotus transversus* Hall., 1852, Pr. Phil. Ac., 177. *Nerodia transversa* B. & G., 1853, Serp., 148; Bd., 1859, P. R. R. Rep., X, pl. 26, f. 1.

Mississippi Valley to Wisconsin.

TROPIDONOTUS TAXISPILOTUS 26

Holbrook, 1842, Herp., IV, 35, pl. 8; Dum. Bibr., 1854, Erp., VII, 603; Jan, 1863, Sist., 71, — 1868, Icon., livr. 26, pl. 5, f. 1.

Nerodia taxispilota B. & G., 1853, Serp., 43; Bd., 1859, P. R. R. Rep., X, pl. 27, f. 29. *Tropidonotus pogonias* D. & B., 1854, Erp., VII, 574; Gthr., 1858, Cat., 248. *Trop. fasciatus* var. *pog.* Jan, 1863, Sist., 71, — Icon., 1868, livr. 26, pl. 3, f. 1.

Southeastern States.

OPHIDIA—Continued.

TROPIDONOTUS CYCLOPION 26

Dum. Bibr., 1854, Erp., VII, 576; Gthr., 1858, Cat., 77, 248; Jan, 1863, Sist., 71, — 1868, Icon., livr. 26, pl. 5, f. 1 and 2; Mart., 1856, Mus. Berl., 24.

Ohio to Florida.

TROPIDONOTUS COMPRESSICAUDUS. 27

Nerodia compressicauda Kenn., 1860, Pr. Ac. Phil., 335. *Tropidonotus compsolaemus* Cope, 1860, Pr. Phil. Ac., 368, — 1861, Pr. Phil. Ac., 74. *Tropidonotus ustus* Cope, 1860, Pr. Phil. Ac., 340.

Florida.

(REGINA.)

TROPIDONOTUS LEBERIS 27

Coluber leberis Linn., 1758, Syst., I, 216, — 1766, Syst., I, 375; Gmelin, Syst. Linn., I, 1086; Shaw, 1804, Zoöl., III, 433. *Tropidonotus leberis* DeKay, 1842, N. Y. Fauna Rept., p. 45, pl. 11; Holbr., 1842, Herp., IV, 49, pl. 13; D. & B., 1854, Erp., VII, 579; Gthr., 1858, Cat., 78; Cope, 1860, Pr. Phil. Ac., 342; Jan, 1863, Sist., 72, — 1868, Icon., livr. 27, pl. 5, f. 1. *Regina leberis* B. & G., 1853, Serp., 45; Baird, 1854, N. Y. Serp., 17, — 1859, P. R. R. Rep., X, pl. 27, f. 32. *Coluber septemvittatus* Say, 1825, Jour. Phil. Ac., 240; Harl., 1827, Jour. Phil. Ac., 335, — 1835, Med. Res., 118.

Michigan to Texas.

Var. RIGIDUS 28

Coluber rigidus Say, 1825, Jour. Phil. Ac., 239. *Tropidonotus rigidus* Holbr., 1842, Herp., IV, 39, pl. X; D. & B., 1854, Erp., VII, 577; Cope, 1860, Pr. Ac. Phil., 342. *Tropidonotus leberis* var. Jan, 1863, Sist., 72. *Regina rigida* B. & G., 1853, Serp., 46; Bd., 1859, P. R. R. Rep., X, pl. 27, f. 33.

New York southward.

Var. CLARKII. . . . .

Regina clarkii B. & G., 1853, Serp., 48; Bd., 1859, P. R. R. Rep., X, pl. 27, f. 35. *Tropidonotus clarkii* Cope, 1861, Pr. Phil. Ac., 74; Jan, 1863, Sist., 73, — 1868, Icon., livr. 27, pl. 6, f. 1. — 1880, Bull. 20, U. S. Mus., 22. *Tropidonotus medusa* Gthr., 1858, Cat., 78.

Orbitals 1—3 to 2. Loreal longer than high. Labials 8, fifth and sixth largest. Scales in 19 rows. Ventrals 132. Anal entire. Subcaudals 57 pairs. Yellowish brown, with four longitudinal bands of darker. Belly yellowish, with two brownish black-dotted bands.

Texas to Mexico.

Var. GRAHAMII 28

Regina grahamii B. & G., 1853, Serp., 47; Bd., 1859, P. R. R. Rep., X, pl. 27, f. 34. *Tropidonotus grahamii* Gthr., 1858, Cat., 78. *Tropidonotus leberis* var. Jan, 1863, Sist., 72. *T. baronis muelleri* Trosch., 1865, in Muell Wirbelth., Mex., 79.

Michigan to Texas.

OPHIDIA—Continued.

Var. VALIDUS 28

Regina valida Kenn., 1860, Pr. Phil. Ac., 334. *Tropidonotus validus* Cope, 1860, Pr. Phil. Ac., 342, — 1861, Pr. Phil. Ac., 298. *Trop. celaeno* Cope, 1860, Pr. Phil. Ac., 341. *Trop. tephropleura* Cope, 1860, Pr. Ac. Phil., 341. (?) *Tropidonotus mesomelanus* Jan, 1863, Sist., 73, — 1868, Icon., livr. 27, pl. 5 and 6, f. 2.

California to Mexico.

TROPIDONOTUS KIRTLANDII 28

Regina kirtlandi Kenn., 1856, Pr. Phil. Ac., 95; Bd., 1859, P. R. R. Rep., X, pl. 27, f. 36. *Tropidoclonion kirtlandi* Cope, 1860, Pr. Ac. Phil., 340, — 1875, Checklist, 42. *Ischnognathus kirtlandi* Jan, 1863, Sist., 74, — 1868, Icon., livr. 30, pl. I, f. 1.

Illinois to Ohio.

STORERIA 29

Baird and Girard, 1853, Cat. Serp., 135.

STORERIA STORERIOIDES 29

Tropidoclonium storerioides Cope, 1865, Pr. Phil. Ac., 190, — 1875, Checklist, 42.

Mexico.

STORERIA OCCIPITOMACULATA 30

Baird & Girard, 1853, Serp., 137; Baird, 1854, N. Y. Serp., 26, — Bd., 1859, P. R. R. Rep., X, pl. 33, f. 99; Cope, 1877, Pr. Am. Phil. Soc., 64, — 1875, Checklist, 42. *Ischnognathus occipitomaculatus* Gthr., 1858, Cat., 81; Jan, 1863, Sist., 74, — 1868, Icon., livr. 30, pl. 1, f. 2. *Tropidonotus occipitomaculatus* Storer, 1839, Rept. Mass., 230. *Coluber venustus* Hall., 1847, Pr. Phil. Ac., 274, — 1849, Pr. Phil. Ac., 245.

Mississippi Valley and eastward.

STORERIA DEKAYI 31

Baird & Girard, 1853, Serp., 135; Baird, 1854, N. Y. Serp., 26, — Bd., 1859, P. R. R. Rep., pl. 33, f. 98; Cope, 1880, Bull. 20, U. S. Mus., 22. *Tropidonotus dekayi* Holbr., 1842, Herp., IV, 53, pl. 14. *Trop. ordinatus* Storer, 1839, Rept. Mass., 223. *Ischnognathus dekayi* Dum. Bibr., 1854, Erp., VII, 507; Gthr., 1858, Cat., 81; Jan, 1863, Sist., 74, — 1868, Icon., livr. 30, pl. 1, f. 3.

Maine to Mexico.

STORERIA COPEI 31

Adelophis copei Cope, 1879, Pr. Am. Phil. Soc., 265.

Guadalaxara, Mexico.

STORERIA LINEATA 32

Microps lineatus Hall., 1856, Pr. Phil. Ac., 241; Bd., 1859, P. R. R. Rep., X, pl. 34, f. 6. *Tropidoclonium lineatum* Cope, 1860, Pr. Phil. Ac., 76, — 1875, Checklist, 42, — 1880, Bull., U. S. Mus., No. 20, p. 22.

Texas to Kansas.

HELICOPS 33

Wagler, 1830, Syst. Amph., 170.

Page 33, line 3, read: Teeth smooth, posterior maxillary larger and often isolated.

OPHIDIA—Continued.

(TRETANORHINUS.)

HELICOPS VARIABILIS 33

Tretanorhinus variabilis D. & B., 1854, Erp. Gen., VII, 349; Jan, 1863, Sist., 76. *Helicops agassizii* Jan, 1863, Sist., 76, — 1868, Icon., livr. 28, pl. 2, f. 1. *Tretanorhinus variabilis* var. *adnexus* Jan, 1863, Sist., 76.

Nicaragua to Mexico.

HELICOPS NIGROLUTEUS . . . .

Tretanorhinus nigroluteus Cope, 1861, Pr. Ac. Phil., 298.

Head narrow, slightly distinct. Rostral broader than high, separated from internasals by the nasals. Nasal in two parts, nostril between. Prefrontals as long as frontal. Anterior border of frontal equal to lateral. Loreals two, anterior smaller. Oculars 2—2. Labials 8, fourth in orbit. Infralabials 10. Scales keeled, in 21 rows. Ventrals 136. Anal bifid. Black above; yellow beneath; punctulated anteriorly, punctulations forming bands near the flank.

Central America.

HELICOPS ALLENII 34

Garman, 1874, Pr. Bost. Soc., 92; Cope, 1875, Checklist, 43.

Florida.

HYDROPS 34

Wagler, 1830, Amph., 170; Gray, 1842, Zoöl. Misc., 67; Fitz., 1843, Syst., 25; Gray, 1849, Cat. Serp., 75.

HYDROPS ERYTHROGRAMMUS 35

Coluber erythrogrammus Latr., 1802, Rept., IV, 141; Daud., 1803, Rept., VII, 93, pl. 83, f. 2; Harl., 1827, Jour. Phil. Ac., 361; Holbr., 1836, Herp., I, 115, pl. 22. *Abastor erythrogrammus* B. & G., 1853, Serp., 125; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 93; Gray, 1849, Serp., 78; Gthr., 1858, Cat., 275. *Calopisma erythrogrammus* D. & B., 1854, Erp., VII, 336; Mart., 1856, Mus. Berl., 27; Jan, 1863, Sist., 75, — 1868, Icon., livr. 29, pl. 4, f. 2, pl. 5, f. 1. *Homalopsis erythrogrammus* Boie, 1827, Isis, 551. *Helicops erythrogrammus* Wagl., 1830, Amph., 170; Holbr., 1842, Herp., III, 107, pl. 25. *Homalopsis plicatilis* var. Schleg., 1837, Essai, 173, II, 353. *Natrix erythrogrammus* Merr., 1820, Amph., 117.

Illinois and Virginia southward.

HYDROPS ABACURUS 36

Coluber abacurus Holbr., 1836, Herp., I, 119, pl. 23. *Hydrops abacurus* D. & B., 1854, Erp., Atlas, pl. 65. *Calopisma abacurum* D. & B., 1854, Erp., VII, 342; Mart., 1856, Mus. Berl., 27. *Helicops abacurus* Holbr., 1842, Herp., III, pl. 26. *Hydrops reinwardtii* Gray, 1842, Zoöl. Misc., 67. *Homalopsis reinwardtii* Schleg., 1837, Essai, I, 173, II, 357. *Farancia fasciata* Gray, 1849, Cat., 74; Gthr., 1858, Cat., 275. *Farancia drummondi* Gray, 1842, Zoöl. Misc., 68. *Farancia abacurus* B. & G., 1853, Serp., 123; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 92. *Calopisma reinwardtii* Jan, 1863, Sist., 75, — 1868, Icon., livr. 29, pl. 6, f. 1–2.

The Carolinas to Texas.

OPHIDIA—Continued.

HYDROPS QUINQUEVITTATUS 36

Homalopsis quinquevittatus D. & B., 1854, Erp., VII, 975. *Calopisma quinquevittatum* Jan, 1863, Sist., 75, — 1865, Arch. Zoöl., 244, — 1868, Icon., livr. 30, pl. 2, f. 1. *C. quinquevittatum* var. *mexicana* Jan, 1863, Sist., 75, — 1868, Icon., livr. 30, pl. 2, f. 2.

Mexico and Central America.

HYDROPS SEPTEMVITTATUS . . . .

Calopisma septemvittatum Fischer, 1879, Verh. Nat. Vereins, Hamb., 84.

Internasals fused. Nasal entire, grooved. Loreal present. Labials 8. Infralabials 9. Temporals 1+2+3. Scales in 19 rows, smooth. Ventrals 122 to 130. Anal bifid. Subcaudals 63 to 81 pairs (in description 53 to 73). Back chocolate brown, with four longitudinal black bands. Belly yellowish white, with three longitudinal black bands.

Mexico.

COLUBRINAE. 37

Colubridae Gthr., 1858, Cat., 84.

SALVADORA. 38

Baird and Girard, 1853, Serp., 104. *Phimothyra* Cope, 1860, Pr. Phil. Ac., 253 and 566.

SALVADORA GRAHAMII 38

B. & G., 1853, Serp., pp. 104, 161; Bd., 1859, P. R. R. Rep., X, pl. 32, f. 78, — Mex. Bound. Surv., II, 21, pl. 5, f. 2; Jan, 1861, Icon., livr. 1, pl. 3, f. 1, — 1863, Sist., 58. *Phimothyra grahamii* Cope, 1861, Pr. Phil. Ac., 300, — 1866, Pr. Phil. Ac., 310, — 1875, Checklist, 38; Yarr., 1875, Wheel. Rep., V, 538; Coues, 1875, Wheeler's Rep., V, 620.

California to Mexico and Utah to Texas.

Var. BAIRDII . . . .

Salvadora bairdii Jan, 1861, Icon., livr. 1, pl. 3, f. 2, — 1863, Sist., 58. *Phimothyra bairdii* Cope, 1861, Pr. Phil. Ac., 300; Sumichrast, 1873, Arch. Sci., 245; Ptrs., 1869, Mb. Brl. Akad., 876.

Oculars 2—2 to 3. Loreals 2. Labials 8, sixth largest. Infralabials 10. Temporals 2+2+3. Rostral less produced backward, less prominent, and less free on the margins than that of *S. grahamii.*

Mexico.

Var. HEXALEPIS 39

Phimothyra hexalepis Cope, 1866, Pr. Phil. Ac., 305. *Phimothyra grahamiae* subsp. *hexalepis* Cope, 1875, Checklist, 38. *Phimothyra grahamiae hexalepis* Coues, 1875, Wheeler's Rep., V, 620.

Arizona.

SALVADORA DECURTATA 39

Phimothyra decurtata Cope, 1868, Pr. Phil. Ac., 310, — 1875, Checklist, 38.

Lower California.

OPHIDIA—Continued.

Cyclophis 39

Gthr., 1858, Cat. Serp., 119. *Chlorosoma* B. & G., 1853, Serp., 106.

(Cyclophis.)

Cyclophis vernalis (Green Snake) 39

Gthr., 1858, Cat., 119; Cope, 1875, Checklist, 38; Yarr., 1875, Wheeler's Rep., V, 539; Coues & Yarrow, 1878, Hayden's Rep., IV, 285.

Coluber vernalis (DeK.) Harlan, 1827, Jour. Phil. Ac., 361, —1835, Med. Res., 124; Storer, 1839, Rept. Mass., 224; Holbr., 1842, Herp., III, 79, pl. 17; Thomps., 1842, Hist. Vermont Rept., 117; DeKay, 1842, N. Y. Fauna, III, 40, pl. 11, f. 22; Jones, 1865, Rept. Nova Scotia, 6.

Liopeltis vernalis Cope, 1860, Pr. Phil. Ac., 560; Jan, 1863, Sist., 82, — Icon., livr. 31, pl. 5, f. 3; Hayd., 1862, Trans. Am. Phil. Soc., 177; Allen, 1869, Pr. Bost. Soc., 182.

Chlorosoma vernalis B. & G., 1853, Serp., 100; Bd., 1359, P. R. R. Rep., X, pl. 32, f. 81; Verr., 1863, Pr. Bost. Soc., 195. *Herpetodryas vernalis* Hall., 1856, Pr. Phil. Ac., 243.

East of the Rocky Mountains to Nova Scotia.

(Phyllophilophis.)

Cyclophis aestivus (Green Snake) 40

Gthr., 1858, Cat., 119; Cope, 1875, Checklist, 38, — 1880, Bull. 20, U. S. Mus., 23, — 1877, Pr. Phil. Am. Soc., 64.

Coluber aestivus Linn., 1766, Syst., I, 387; Gmel., 1788, Syst. Linn., I, 1114; Harl., 1827, Jour. Phil. Ac., 357, — 1835, Med. Res., 121. *Leptophis aestivus* Bell, 1826, Zoöl. Jour., II, 329; Holbr., 1842, Herp., IV, 17, pl. 3; B. & G., 1853, Serp., 106.; Bd., 1859, P. R. R. Rep., X, pl. 32, f. 79. *Liopeltis aestivus* Jan, 1863, Sist., 81, — 1869, Icon., livr. 31, pl. 5, f. 1.

Opheodrys aestivus Cope, 1860, Pr. Ac. Phil., 560. *Herpetodryas aestivus* Schleg., 1837, Essai, I, 151, II, 186, pl. 6, f. 12, 13; D. & B., 1854, Erp., VII, 209; Mart., 1856, Mus. Berl., 26. *Leptophis majalis* B. & G., 1853, Serp., 107, 161, — 1854, Marcy's Exp., 203, pl. 9; Bd., P. R. R. Rep., X, pl. 32, f. 80.

The Green Snake Catesby, 1743, Carol., II, pl. 57; Bartram, 1791, Georgia, 16.

Maryland to Mexico.

Coluber 40

Coryphodon D. & B., 1854, Erp., VII, 178; Gthr., 1858, Cat. 107.

(Bascanium.)

Coluber constrictor (Black Snake) 41

Linn., 1758, Syst., I, 216, — 1766, Syst., I, 385; Gmel., 1788, Syst. Linn., I, 1109; Shaw, 1802, Zoöl., III, 464; Latr., 1802, Rept., IV, 178; Merr., 1820, Syst., 108; Daud., 1803, Rept., VI, 402; Harl., 1827, Jour. Phil. Ac., 348, — 1835, Med. Res., 112; Schleg., 1837, Essai, I, 144, II, 133, pl. 5, f. 3 and 4; Stor., 1839, Rept. Mass., 225; Holbr., 1842, Herp., III, 55, pl. 11; Thomps., 1842, Vermont, 117; DeK., 1842, N. Y. Rept., 35, pl. 10, f. 20; Mart., 1856, Mus. Berl., 24; Jones, 1865, Rept. Nova Scotia, 4.

OPHIDIA—Continued.

Bascanion constrictor B. & G., 1853, Serp., 93; Baird, 1854, Serp. N. Y., 22; Bd., 1859, P. R. R. Rep., X, pl. 31, f. 67; Allen, 1869, Pr. Bost. Soc., 180; Cope, 1875, Checklist, 40, —1877, Pr. Am. Phil. Soc., 64.

Coryphodon constrictor D. & B., 1854, Erp., VII, 183; Gthr., 1858, Cat., 108; Jan, 1863, Sist., 64, — 1867, Icon., livr. 22, pl. 4, f. 3, — 1876, Icon., livr. 48, pl. 6, f. 1.

Bascanion Foxii B. & G., 1853, Serp., 96; Bd., 1859, P. R. R. Rep., X, pl. 31, f. 69. *Hierophis constrictor* Bonap., 1841, It. Fauna, II.

The Black Snake Catesby, 1743, Carol., II, 48, pl. 48; Kalm., 1764, Reise Amer., II, 202; Penn., 1792, Arct. Zoöl., II, Supp., 92.

Texas to Nova Scotia.

Var. FLAVIVENTRIS (Blue Racer) 42

Coluber flaviventris Say, 1823, Long's Exp., I, 185.

Bascanium flaviventre B. & G., 1853, Serp., 96; Bd., 1859, Mex. Bound., II, Rept., 20, — P. R. R. Rept., X, pl. 31, f. 70; Hayd., 1862, Trans. Phil. Soc., 177; Allen, 1874, Pr. Bost. Soc., 69; Yarr., 1875, Wheel. Rep., V, 511, 515, and 541; Coues & Yarrow, 1878, Hayd. Rep., IV, 284. *Coryphodon flaviventris* Hall., 1856, Pr. Phil. Ac., 241.

C. constrictor var. *flaviventris* Jan, 1863, Sist., 64, — 1867, Icon., livr. 22, pl. 3, f. 1–2, — 1876, Icon., livr. 48, pl. 6, f. 2.

Bascanion vetustus B. & G., 1853, Serp., 97; Girard, 1858, Expl. Exp., Rept., 127; Bd., 1859, P. R. R. Rep., X, pl. 36, f. 6; Cooper, 1860, P. R. R. Rep., XII (2), 301.

Bascanium constrictor subsp. *vetustum* Yarrow, 1875, Wheeler's Rep., V, 541; Cope, 1875, Checklist, 40. *Coryphodon constrictor* var. *vetustum* Jan, 1863, Sist., 64, — Icon., livr. 22, pl. 4, f. 1–2. (?) *Bascanion Fremontii* B. & G., 1853, Serp., 95; Bd., 1859, P. R. R. Rep., X, pl. 31, f. 68.

Mississippi basin westward to the Pacific.

Var. MENTOVARIUS 42

Coryphodon mentovarius D. & B., 1854, Erp., VII, 187; Jan, 1863, Sist., 64. *Bascanium mentovarium* Cope, 1879, Pr. Am. Phil. Soc., 271.

Mexico; Tehuantepec.

(MASTICOPHIS.)

COLUBER FLAGELLIFORMIS ("Coach-whip Snake") 42

Anguis flagelliformis, The Coach-whip Snake, Catesby, 1743, Carol., II, 54. *Coluber flagellum* Shaw, 1802, Zoöl., III, 475. *Coluber flagelliformis* Holbr., 1836, Herp., I, 107, pl. 19. *Psammophis flagelliformis* Holbr., 1842, Herp., IV, 11, pl. 2. *Masticophis flagelliformis* B. & G., 1853, Serp., 98; Bd., 1859, P. R. R. Rep., X, pl. 31, f. 71, pl. 32, f. 72; Jan, 1863, Sist., 65, — Icon., livr. 20, pl. 6, f. 1. *Herpetodryas flagelliformis* D. & B., 1854, Erp., VII, 210; Mart., 1856, Mus. Berl., 26; Gthr., 1858, Cat., 118. *Drymobius flagelliformis* Cope, 1860, Pr. Phil. Ac., 561. *Bascanium flagelliforme* Cope, 1877, Pr. Am. Phil. Soc., 64. *Bascanium flagelliforme* subsp. *flagelliforme* Cope, 1875, Checklist, 40. *Herpetodryas psammophis* Schleg., 1837, Essai, I, 152, II, 195.

Coach-whip Snake Bartram, 1791, Travels, 219.

Southern States westward to Louisiana.

OPHIDIA—Continued.

Var. TESTACEUS 43

Coluber testaceus Say, 1823, Long's Exp., II, 48; Harl., 1827, Jour. Phil. Ac., 348, — 1835, Med. Res., 113; Holbr., 1842, Herp., III, 63, pl. 13; B. & G., 1853, Serp., 150. *Coryphodon testaceus* Gthr., 1858, Cat., 108. *Drymobius testaceus* Cope, 1860, Pr. Phil. Ac., 561. *Masticophis testaceus* B. & G., 1859, Mex. Bound., II, Rept., 20; Baird, 1859, P. R. R. Rep., X, 43; Cope, 1866, Pr. Phil. Ac., 305. *Bascanium flagelliforme* subsp. *testaceum* Cope, 1875, Checklist, 40, — 1880, Bull. 20, U. S. Mus., 23; Yarr., 1875, Wheeler's Rep., V, 542; Coues, 1875, Wheel. Rep., V, 617. *Masticophis flagelliformis* var. *testaceus* Jan, 1863, Sist., 65, — 1867, Icon., livr. 20, pl. 6, f. 2. *Psammophis flavigularis* Hall., 1852, Pr. Phil. Ac., 178, — 1853, Sitgreave's Exp., f. 31, 146. *Masticophis flavigularis* B. & G., 1853, Serp., 99, 159, — B. & G., 1854, Marcy's Exp., 201; Bd., 1859, P. R. R. Rep., X, pl. 32, f. 73. *Herpetodryas flavigularis* Hall., 1859, P. R. R. Rep., X, Rept., 12. (?) *Coluber mormon* B. & G., 1852, Stansbury's Exp., 351. *Masticophis mormon* B. & G., 1853, Serp., 101; Bd., 1859, P. R. R. Rep., X, pl. 32, f. 74.

Dakota to Texas and the Pacific Coast.

Var. AURIGULUS 44

Drymobius aurigulus Cope, 1861, Pr. Phil. Ac., 301, — 1875, Checklist, 40.

Lower California.

COLUBER MEXICANUS 45

Zamenis mexicanus D. & B., 1854, Erp., VII, 695. (?) *Masticophis mexicanus* Jan, 1863, Sist., 65, — 1867, Icon., livr. 22, pl. 6, f. 1. *Phimothyra mexicana* Cope, 1864, Pr. Phil. Ac., 167.

Mexico.

COLUBER SPINALIS 45

Masticophis spinalis Peters, 1866, MB. Berl. Akad., 91.

COLUBER TAENIATUS 46

Leptophis taeniata Hall., 1852, Pr. Phil. Ac., 181, — 1853, Sitgreave's Exp., 133, 146. *Masticophis taeniatus* B. & G., 1853, Serp., 103; Bd., 1859, P. R. R. Rep., X, 20, pl. 23, pl. 32, f. 76; Cooper, 1860, P. R. R. Rep., XII, 302; Jan, 1863, Sist., 64, — 1867, Icon., livr. 22, pl. 5; Cope, 1866, Pr. Phil. Ac., 305. *Drymobius taeniatus* Cope, 1860, Pr. Phil. Ac., 561. *Bascanium taeniatum* subsp. *taeniatum* Cope, 1875, Checklist, 40. *Bascanium taeniatum* Coues, 1875, Wheeler's Rep., V, 616. *Leptophis lateralis* Hall., 1853, Pr. Phil. Ac., 237, — 1859, P. R. R. Rep., X, Rept., 13, pl. 4, f. 3. *Masticophis schottii* B. & G., 1853, Serp., 160; Bd., 1859, Mex. Bound., II, 20, — P. R. R. Rep., X, pl. 32, f. 77. *Bascanium taeniatum* subsp. *laterale* Cope, 1875, Checklist, 40; Yarr., 1875, Wheel. Rep., V, 543. *Bascanium laterale* Yarr., 1875, Wheeler's Rep., V, 512. *Bascanium taeniatum* var. *ornatum* Coues, 1875, Wheeler's Rep., V, 617; Cope, 1875, Checklist, 40. *Masticophis ornatus* B. & G., 1853, Serp., 102, 159; Bd., 1859, P. R. R. Rep., X, pl. 32, f. 75. *Bascanium flagelliforme* subsp. *piceum* Cope, 1875, Checklist; Coues, 1875, Wheeler's Rep., V, 617. *Bascanium taeniatum* subsp. *piceum* Cope, 1880, Bull. 20, U. S. Mus., 24.

From the Plains to the Pacific.

OPHIDIA—Continued.

Var. bilineatus . . . .

Masticophis bilineatus Jan, 1863, Sist., 40, — 1867, Icon., livr. 22, pl. 6, f. 1.

Scales smooth, in 17 rows. Oculars 2—2, lower anteocular very small. Temporals 2+2+2. Labials 8, fourth and fifth in orbit, or 9, fifth and sixth touching the eye, seventh largest. Infralabials 10 to 11. Back black, with two narrow lines of light color along each flank. Orbitals, loreal, and nasals each with white spot. Labials and ventral surface light.

Mexico.

Spilotes 47

Wagler, 1830, Amph., 179; Gthr., 1858, Cat., 96. *Georgia* B. & G., 1853, Serp., 92.

(Georgia.)

Spilotes couperi 48

Cope, 1860, Pr. Phil. Ac., 342, 564, — 1875, Checklist, 39. *Coluber couperi* Holbr., 1842, Herp., III, 75, pl. 16. *Georgia couperi* B. & G., 1853, Serp., 92; Bd., 1859, P. R. R. Rep., X, pl. 31, f. 66.

Gulf States.

Spilotes obsoletus 48

Coluber obsoletus Holbr., 1842, Herp., III, 61, pl. 12. *Georgia obsoleta* B. & G., Serp., 158; Bd., 1859, P. R. R. Rep., X, pl. 31, f. 66. *Spilotes erebennus* Cope, 1860, Pr. Phil. Ac., 342, 564, — 1864, Pr. Phil. Ac., 167, — 1875, Checklist, 39; Sumichr., 1873, Arch. Sci., 246. *Spilotes corais erebennus* Cope, 1877, Pr. Am. Phil. Soc., 64.

Florida to Texas.

(Spilotes.)

Spilotes corais 48

Coluber corais (Cuv.) Boie, 1827, Isis, 537; Schleg., 1837, Essai, II, 139, pl. 5, f. 9–11, 1844 (?), Abbild., pl. 28, f. 9–11 (skull).

Spilotes corais D. & B., 1854, Erp., VII, 222; Gthr., 1858, Cat., 98; Jan, 1863, Sist., 62, — 1876, Icon., livr. 48, pl. 4, f. 6, pl. 5, f. 1.

Brazil to Mexico.

Spilotes variabilis 49

Dum. Bibr., 1854, Erp., VII, 220; Gthr., 1858, Cat., 99; Sumichr., 1873, Arch. Sci., 245. *Coluber variabilis* Max., 1825, Beitr., 271, — 1830, Abbild., Lief. 14, pl. 2, f. 3–6; Boie, 1827, Isis, 537. *Coluber pullatus* Linn., 1754, Mus. Ad. Fridr., pl. 20, f. 3. *Cerastes mexicanus & C. coronatus* Laur., 1768, Synops., 83. *Coluber mexicanus* Gmel., 1788, Syst. Nat. Linn., I, 1088. *Coluber plutonius* Daud., 1803, Rept., 324; Merr., 1790, Beitr. (2), pl. 12. *Coluber caninana* Merr., 1820, Syst., 121. *Spilotes pullatus* Wagl., 1830, Amph., 179; Schleg., 1837, Essai, 149, pl. 6, f. 1, 2; Fitz., 1843, Syst., 26; Cope, 1861, Pr. Phil. Ac., 300.

Seba, 1735, Thesaur., II, pl. 20, f. 1, pl. 105, f. 4; Scheuch., 1736, Bibl. Sacr., pl. 662, f. 11, pl. 747, f. 3.

Mexico to Brazil.

OPHIDIA—Continued.

Var. AURIBUNDUS 50

Spilotes pullatus subsp. *auribundus* Cope, 1861, Pr. Phil. Ac., 300. *Spilotes auribundus* (*S. salvinii* Gthr.) Cope, 1864, Pr. Phil. Ac., 167; Sumichr., 1873, Arch. Sci., 245.

Mexico.

SPILOTES MELANURUS 50

Dum. Bibr., 1854, Erp., VII, 224; Jan, 1863, Sist., 63, — 1876, Icon., livr. 48, pl. 5, f. 2. *S. corais* var. *melanurus* Gthr., 1858, Cat., 99.

Mexico.

SPILOTES POECILONOTUS 50

Guenther, 1858, Cat., 100; Sumichr., 1873, Arch. Sci., 245.

Mexico.

PITYOPHIS 51

Holbrook, 1842, Herp., IV, 7; Harl., 1852, Pr. Phil. Ac., 181; B. & G., 1853, Serp., 64; D. & B., 1854, Erp., VI, 232; Gthr., 1858, Cat., 85.

PITYOPHIS MELANOLEUCUS (Bull Snake) 51

Holbr., 1842, Herp., IV, 7, pl. 1; B. & G., 1853, Serp., 65; D. & B., 1854, Erp., VII, 233; Mart., 1856, Mus. Berl., 26; Gthr., 1858, Cat., 86; Bd., 1859, P. R. R. Rep., X, pl. 29, f. 44; Cope, 1875, Checklist, 39, — 1877, Pr. Am. Phil. Soc., 64. *Coluber melanoleucus* Daud., 1803, Rept., VI, 409; Harl., 1827, Jour. Phil. Ac., 359, — 1835, Med. Res., 122.

Pine Snake or *Bull Snake* Bartram, 1791, Travels, 276.

East of the Mississippi, south of Ohio and Pennsylvania.

PITYOPHIS CATENIFER 52

Coluber catenifer Blainville, 1835, Nouv. Ann. Mus., IV, 290, pl. 26, f. 2. *Pityophis catenifer* B. & G., 1853, Serp., 69; Grd., 1858, Expl. Exp., Rept., 135; Bd., 1859, P. R. R. Rep., X, pl. 36, f. 4; Gthr., 1858, Cat., 87; Cope, 1875, Checklist, 39; Bd., 1859, P. R. R. Rep., X, Williamson's Route, 11. *P. annectens* B. & G., 1853, Serp., 72; Bd., 1859, P. R. R. Rep., X, pl. 29, f. 48; *P. wilkesii* B. & G., 1853, Serp., 71; Grd., 1858, Wilkes' Exp., Rept., 137, pl. 9, f. 1—7; Bd., 1859, P. R. R. Rep., X, pl. 29, f. 47. *P. melanoleucus* var. *catenifer* Jan, 1863, Sist., 59, — 1867, Icon., livr. 22, pl. 1, f. 1. *P. heermanni* Hall., 1853, Pr. Phil. Ac., 236. *Coluber vertebralis* Blainv., 1835, Ann. Mus., IV, 293, pl. 27, f. 2; B. & G., 1853, Serp., 152. *Pityophis vertebralis* D. & B., 1854, Erp., VII, 238; Gthr., 1858, Cat., 86; Cope, 1861, Pr. Phil. Ac., 300, — 1875, Checklist, 39; Hall., 1859, P. R. R. Rep., X, 14. *P. haematois* Cope, 1860, Pr. Phil. Ac., 342. *P. melanoleucus* var. *vertebralis* Jan, 1863, Sist., 59, — 1867, Icon., livr. 22, pl. 1, f. 3.

Oregon to Mexico.

Var. SAYI 52

Coluber sayi Schleg., 1837, Essai, II, 157; B. & G., 1853, Serp., 151. *C. melanoleucus* var. Harl., 1827, Jour. Phil. Ac., 360, — 1835, Med. Res., 123. *Pityophis melanoleucus* Max., 1865, Reise N. Amer., 95. *P. sayi* B. & G., 1853, Serp., 152; Bd., 1859, P. R. R. Rep., X, pl. 29, f. 45;

OPHIDIA—Continued.

Coop., 1860, P. R. R. Rep., XII (2), 300; Hayden, 1862, Trans. Phil. Soc., 177. *P. sayi* subsp. *sayi* Cope, 1875, Checklist, 39. *P. McClellanii* B. & G., 1853, Serp., 68, — 1854, Marcy's Exp., 196, pl. 5; Bd., 1859, P. R. R. Rep., X, pl. 29, f. 47.

Rocky Mountains to Illinois.

Var. MEXICANUS. 52

Pityophis mexicanus D. & B., 1854, Erp., VII, 236; Jan, 1863, Sist., 59, — 1867, Icon., livr. 22, pl. 2, f. 1. *Anasime mexicanus* D. & B., 1854, Erp., Atlas, pl. 62. (?) *Pityophis sayi* var. *mexicanus* Cope, 1875, Checklist, 39. (?) *P. sayi* subsp. *mexicanus* Yarr., 1875, Wheeler's Rep., V, 539. (?) *P. sayi mexicanus* Cope, 1880, Bull. 20, U. S. Mus., 23.

Mexico.

Var. DEPPEI . . . .

Elaphis deppei D. & B., 1854, Erp., VII, 268. *Pityophis deppei* Jan, 1863, Sist., 59, — 1867, Icon., livr. 22, pl. 2, f. 2. *P. deppei* var. *pholidostictus* Jan, 1863, Sist., 59. *Arizona elegans* (Kenn.) Bd., 1859, P. R. R. Rep., X, 42, — 1859, Mex. Bound., II, pl. XIII. *Pityophis elegans* Cope, 1875, Checklist, 39; Yarr., 1875, Wheel. Rep., V, 541, & Coues, p. 618. (?) *Arizona jani* Cope, 1860, Pr. Phil. Ac., 369. (?) *Arizona lineaticollis* Cope, 1861, Pr. Ac. Phil., 300.

Scales in 29 to 31 rows, keels of vertebral low to obsolete. Oculars 1 to 2—2. Loreal narrow. Temporals 3+3 to 4. Prefrontals commonly two, sometimes four. Ventrals 235; anal entire; subcaudals 67 pairs. Dorsal and lateral series of blotches more or less irregular in shape. Head nearly uniform light.

Arizona to Mexico.

Var. BELLONA. 53

Churchillia bellona B. & G., 1852, Stansbury's Exp., 350. *Pityophis bellona* B. & G., 1853, Serp., 66, 157; Gthr., 1858, Cat., 87; (Kenn.) Bd., 1859, P. R. R. Rep., X, 42, pl. 28, f. 46, — Mex. Bound., II, 18; Cope, 1866, Pr. Ac. Phil., 305; Allen, 1874, Pr. Bost. Soc., 69. *P. sayi* var. *bellona* Cope, 1875, Checklist, 39. *P. sayi* subsp. *bellona* Yarr., 1875, Wheeler's Rep., V, 540, & Coues, p. 617; Coues & Yarr., 1878, Hayd. Rep., IV, 282. *P. affinis* Hall., 1852, Pr. Phil. Ac., 181, — 1853, Sitgr. Exp., 130, 146.

The Utah basin.

ELAPHIS 53

Aldrovandus, 1640, Hist. Serp. Drac., 267 (re-print, 1765); Bonap., 1831, Saggio. Dum., 1852, Mem. Sci. Nat., XXIII, 453; D. & B., 1854, Erp., VII, 243; Gthr., 1858, Cat., 92. *Elaphe* Fitz., 1833, Wagler's Icon., pl. 27, — 1843, Syst., 26.

(SCOTOPHIS.)

ELAPHIS OBSOLETUS (Black Snake) 54

Coluber obsoletus Say, 1823, Long's Exp., I, 140; Harl., 1827, Jour. Phil. Ac., 347, — 1835, Med. Res., 112. *Scotophis obsoletus* Kenn., 1860, Pr. Phil. Ac., 330. *Coluber obsoletus* subsp. *obsoletus* Cope, 1875, Checklist, 39. *Elaphis spiloides* D. & B., 1854, Erp., VII, 269; Gthr., 1858, Cat., 90.

Mississippi Valley.

OPHIDIA—Continued.

Var. ALLEGHANIENSIS (Black Pilot Snake). 54

Coluber alleghaniensis Holbr., 1842, Herp., III, pl. 19. *Scotophis alleghaniensis* B. & G., 1853, Serp., 73; (Kenn.) Bd., 1859, P. R. R. Rep., X, pl. 29, f. 49. *Elaphis alleghaniensis* Hall., 1856, Pr. Phil. Ac., 243; Mart., 1856, Mus. Berl., 27; Jan, 1863, Sist., 62, — 1867, Icon., livr. 24, pl. 2, f. 1–2; Allen, 1869, Pr. Bost. Soc., 181. *E. Holbrookii* D. & B., 1854, Erp., VII, 272. *E. rubriceps* D. & B., 1854, Erp., VII, 270. *E. alleghaniensis* vars. *rubriceps & holbrookii* Jan, 1863, Sist., 62. *Scotophis confinis* B. & G., 1853, Serp., 76; Bd., 1859, P. R. R. Rep., X, pl. 30, f. 52.

New England to Alabama.

Var. LINDHEIMERII 54

Scotophis lindheimerii B. & G., 1853, Serp., 74; Bd., 1859, P. R. R. Rep., X, pl. 29, f. 50. *Coluber lindheimerii* Cope, 1875, Checklist, 39, — 1880, Bull. 20, U. S. Mus., 23. *Scotophis rhinomegas* Cope, 1860, Pr. Phil. Ac., 255. *S. laetus* B. & G., 1853, Serp., 77, — 1854, Marcy's Exp., 198, pl. 6; Bd., 1859, P. R. R. Rep., X, pl. 30, f. 53. *S. calligaster* Kenn., 1859, Pr. Phil. Ac., 98. *Elaphis guttatus* var. *calligaster* Jan, 1863, Sist., 62, — 1867, Icon., livr. 21, pl. 6, f. 2. *E. guttatus* var. *rhinomegas* Jan, 1863, Sist., 62. *Scotophis emoryi* B. & G., 1853, Serp., 157; (Kenn.) Bd., 1859, P. R. R. Rep., X, 42, pl. 30, f. 56. *Coluber emoryi* Cope, 1880, Bull. 20, U. S. Mus., 23.

Illinois to Texas.

Var. BAIRDII . . . .

Coluber bairdi (Yarrow) Cope, 1880, Bull. U. S. Nat. Mus., p. 41.

Vertical plate longer than broad, with a slight notch in anterior border; posterior portion very large, broader than long. Nine upper labials, seventh largest. Lower labials twelve, seventh largest. Dorsal rows of scales 27, long and lozenge-shaped; three upper dorsal rows slightly carinated. General color above (alcoholic) warm grayish-ash; beneath yellowish; behind occipitals two converging oblong brown blotches, and posterior to these a series of narrow transverse brown blotches, eighty in number, becoming obsolete near caudal extremity; these blotches are six scales in width (Yarrow).

Fort Davis, Texas.

ELAPHIS GUTTATUS (Corn Snake) 55

Coluber guttatus Linn., 1766, Syst., I, 385; Daub., 1771, Encycl. Meth., 602; Gmel., 1788, Syst. Linn., I, 1110; Schleg., 1837, Essai, I, 149, II, 168; Holbr., 1842, Herp., III, 65, pl. 14; Harl., 1827, Jour. Phil. Ac., 363, — 1835, Med. Res., 126; Holbr., 1838, Herp., II, 109; Gthr., 1858, Cat., 89; Cope, 1875, Checklist, 39. *C. carolinianus* Shaw, 1802, Zoöl., III, 460, pl. 19. *C. maculatus* Latr., 1802, Rept., IV, 73; Harl., 1827, Jour. Phil. Ac., 362, — 1835, Med. Res., 125. *C. molossus* Daud., 1803, Rept., VI, 269; Harl., 1827, Jour. Phil. Ac., 363, — 1835, Med. Res., 126. *C. floridanus* Harl., 1827, Jour. Phil. Ac., 360, — 1835. Med. Res., 124. *C. compressus* (Donnd.) Bechst., 1802, Ueb.

OPHIDIA—Continued.

LaC.,Amph., IV, 236, pl. 36, f. 2. *C. pantherinus*, p. 102, *Natrix guttatus*, p. 99, and *N. maculatus*, p. 124, Merr., 1820, Syst. Amph. ~~*Scotophis guttatus* D. & B., Erp., VII, 273; Mart., 1856, Mus. Berl., 27; Jan, 1863, Sist., 62, — 1867, Icon., livr. 21, pl. 6, f. 1.~~ *Elaphis guttatus* D. & B., 1854, Erp., VII, 273; Mart., 1856, Mus. Berl., 27; Jan, 1863, Sist., 62, — 1867, Icon., livr. 21, pl. 6, f. 1.

LaC., 1789, Quad. Ovip., II, 329; Bonn., 1790, Encycl. Meth., Ophiol., 19; Merr., 1790, Beitr., II. t. 11.

Corn Snake Catesby, 1743, Carol., II, pl. 55.

Southeastern States to Virginia.

Var. vulpinus 56

Scotophis vulpinus B. & G., 1853, Serp., 75; Bd., 1859, P. R. R. Rep., X, pl. 29, f. 51; (Kenn.) Coop., 1860, P. R. R. Rep., XII (2), 99. *Coluber vulpinus* Cope, 1875, Checklist, 39.

Massachusetts to Nebraska.

Elaphis quadrivittatus (Chicken Snake) 56

Coluber quadrivittatus Holbr., 1842, Herp., III, 89, pl. 20; Gthr., 1858, Cat., 88; Cope, 1875, Checklist, 39, — 1877, Pr. Am. Phil. Soc., 64. *Scotophis quadrivittatus* B. & G., 1853, Serp., 80; Bd., 1859, P. R. R. Rep., X, pl. 30, f. 55. *Elaphis quadrivittatus* D. & B., 1854, Erp., VII, 265; Jan, 1863, Sist., 62.

Florida to Virginia.

Dromicus 56

Bibron, 1843, Rept. Cuba, Sagra, 221; D. & B., 1854, Erp., VII, 646; Gthr., 1858, Cat., 126.

Dromicus laureatus 57

Guenther, 1868, Ann. Mag., 419.

"City of Mexico."

Dromicus flavilatus 58

Cope, 1871, Pr. Phil. Ac., — 1875, Checklist, 38, — 1877, Pr. Am. Phil. Soc., 65.

Florida to North Carolina.

Dromicus margaritiferus 58

Guenther, 1858, Cat., 126. *Herpetodryas margaritiferus* Schleg., 1837, Essai, I, 151, II, 184, — Abbild., t. 44. *Leptophis margaritiferus* D. & B., 1853, Erp., VII, 539; Mart., 1856, Mus. Berl., 26. *Thamnosophis margaritiferus* Jan, 1863, Sist., 82, — 1868, Icon., livr. 31, pl. 6, f. 3. *Zamenis tricolor* Hall., 1855, Jour. Phil. Ac., 34, f. 3. *Coluber hickanella* Shaw, 1802, Zoöl., III, 511.

Mexico and Central America.

Dromicus putnami 59

Jan, 1863, Sist., 67, — 1867, Icon., livr. 6, f. 3. *Tomodon nasutus* Cope, 1864, Pr. Phil. Ac., 166.

Southern Mexico.

OPHIDIA—Continued.

CORONELLINAE 59

Coronellidae Gthr., 1858, Cat., 22.

TACHYMENIS 60

Wiegmann, 1834, Nov. Act. Acad. Caes. Leop., 252; Gthr., 1858, Cat., 33.

TACHYMENIS LINEATA 60

Tomodon lineatum D. & B., 1854, Erp., VII, 936, — Atlas, pl. 73 (named *Eudromus lineatus*); Jan, 1863, Sist., 57, — 1866, Icon., livr. 19, pl. 6, f. 3. *Psammophis lineatus* Gthr., 1858, Cat., 135. Mexico.

TACHYMENIS IMPERIALIS 61

Taeniophis imperialis B. & G., 1855, Gilliss' Exp., II, 215 (name); Bd., 1859, Mex. Bound. Rept., 23, pl. 19, f. 1, — P. R. R. Rep., X, pl. 33, f. 87. *Coniophanes imperialis* Cope, Pr. Phil. Ac., 74, — 1875, Check-list, 38. Texas and Mexico.

TACHYMENIS LATERITIA 61

Coniophanes lateritia Cope, 1861, Pr. Phil. Ac., 524. "Guadalaxara, Mexico."

TACHYMENIS PROTEROPS 62

Coniophanes proterops Cope, 1860, Pr. Phil. Ac., 249. Mexico, New Grenada.

TACHYMENIS FISSIDENS 62

Coronella fissidens Gthr., 1858, Cat., 36.

Glaphyrophis lateralis Jan, 1863, Sist., 54, — 1866, Icon., livr. 18, pl. 5, f. 3. Mexico.

TACHYMENIS BIPUNCTATA 63

Coronella bipunctata Gthr., 1858, Cat., 36.

Glaphyrophis pictus Jan, 1863, Sist., 54, — 1866, Icon., livr. 18, pl. 5, f. 4. Mexico.

TACHYMENIS MELANOCEPHALA 63

Peters, 1869, Berl. Akad. Monatsb., 876. Mexico.

ERYTHROLAMPRUS 63

Boie, 1826, Isis, 981; Wagl., 1830, Syst., 187; D. & B., 1854, Erp., VII, 843; Gthr., 1858, Cat., 47.

ERYTHROLAMPRUS GUENTHERI 63

E. venustissimus var. D. Gthr., 1858, Cat., 48. "Mexico (?)"

OPHIBOLUS 64

Baird & Girard, 1853, Serp., 82.

OPHIBOLUS DOLIATUS 64

Coluber doliatus Linn., 1766, Syst., I, 379; Gmel., 1788, Syst. Linn., I, 1096; Harl., 1827, Jour. Phil. Ac., 362, — 1835, Med. Res., 125. *Coronella doliata* Holb., 1842, Herp., II, 105, pl. 24; D. & B., 1854, Erp., VII, 621; Gthr., 1858, Cat., 41. *C. coccinea* Schleg., 1837, Essai, I, 135, II, 57, pl. 2, f. 1. *Ophibolus doliatus* subsp. *doliatus* Cope, 1875, Checklist, 37 (part). *Sphenophis coccinea* Fitz., 1843, Syst., 25. Southeastern States.

OPHIDIA—Continued.

(Var. ELAPSOIDEUS 65

Osceola elapsoidea Baird & Girard, 1853, Serp., 133; Mart., 1856, Mus. Berl., 24; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 97; Cope, 1875, Check-list, 36, — 1877, Pr. Am. Phil. Soc., 65. *Calamaria elapsoidea* Holbr., 1842, Herp., III, 119, pl. 28.

Coronella coccinea Jan, 1863, Sist., 46, — 1866, Icon., livr. 17, pl. 1, f. 1. *Cemophora coccinea* Jan, 1865, Icon., livr. 11, pl. 5, f. 1.

Southern States east of the Mississippi.

OPHIBOLUS TRIANGULUS 65

La Triangle LaC., 1789, Serp., II, 331. *Coluber triangulus* Boie, 1827, Isis, 537. *Ablabes triangulum* D. & B., 1854, Erp., VII, 315. *Lampropeltis triangula* Cope, 1860, Pr. Phil. Ac., 256; Allen, 1869, Pr. Bost. Soc., 180. *Coluber eximius* Stor., 1839, Mass. Rep., 227; Holbr., 1842, Herp., III, 69, pl. 15; DeK., 1842, N. Y. Rept., 28, pl. 12, f. 25; Gthr., 1858, Cat., 91. *Ophibolus eximius & clericus* B. & G., 1853, Serp., 87 and 88; Bd., 1859, P. R. R. Rep., X, pl. 30, f. 61, 62, — 1854, Serp. N. Y., 21. *O. doliatus* var. *triangulus* Cope, 1875, Check-list, 37. *Coronella eximia* Jan, 1863, Sist., 46, — 1866, Icon., livr. 17, pl. I, f. 3.

Pseudelaps y Berth., 1843, Abh. Gött., I, 67, pl. 1, f. 11 and 12. *Ablabes triangulum* var. *clericus* Hall, 1856, Pr. Phil. Ac., 246.

Coluber eximius of Harlan, with 250 + 33 to 60 ventrals and subcaudals; is probably a species of *Scotophis*.)

House Snake; Chicken Snake; Milk Snake; or Thunder Snake.

East of the Mississippi to Canada.

Var. CALLIGASTER 66

Coluber calligaster Harl., 1835, Med. Res., 122. *Ablabes triangulum* var. *calligaster* Hall., 1856, Pr. Ac. Phil., 244. *Lampropeltis calligaster* Cope, 1860, Pr. Phil. Ac., 255. *Ophibolus calligaster* Cope, 1875, Checklist, 37. *O. evansii* Kenn., 1859, Pr. Phil. Ac., 99. (?) *Coronella evansii* Jan, 1863, Sist., 47, — 1866, Icon., livr. 17, pl. 2, f. 3.

Northern portion of the Mississippi Valley.

Var. MEXICANUS 66

San Luis Potosi.

Var. DOLIATUS 66

Ophibolus doliatus B. & G., 1853, Serp., 89; Bd., 1859, P. R. R. Rep., X, pl. 30, f. 63. *Coronella doliata* var. *gentilis* Jan, 1863, Sist., 46, — 1866, Icon., livr. 17, pl. 1, f. 2. *Lampropeltis multistriata* Kenn., 1860, Pr. Phil. Ac., 328. *Coronella doliata* Jan, 1863, Sist., 46, — 1865, Icon., livr. 14, pl. 4, f. 1.

Nebraska and southward.

Var. GENTILIS 66

Ophibolus gentilis B. & G., 1853, Serp., 90, — 1854, Marcy's Exp., 229, pl. 8; Bd., 1859, P. R. R. Rep., X, pl. 30, f. 64. *Lampropeltis doliata* Cope, 1860, Pr. Phil. Ac., 256. *Ophibolus doliatus* subsp. *doliatus* Cope, 1875, Checklist, 37.

Arkansas to Utah.

OPHIDIA—Continued.

Var. ZONATUS 67

Coluber (*zacholus*) *zonatus* Blainv., 1835, Nouv. Ann. Mus., IV, 293; B. & G., 1853, Serp., 153. *Bellophis zonatus* Lockington, 1876, Pr. Cal. Acad. California.

Var. ANNULATUS . . . .

Lampropeltis annulata Kenn., 1860, Pr. Phil. Ac., 329; Cope, 1860, Pr. Phil. Ac., 257. *Ophibolus doliatus* subsp. *annulatus* Cope, 1875, Checklist, 36; Yarrow, 1875, Wheeler's Rep., V, 537. ? *Lampropeltis polyzona* Cope, 1860, Pr. Phil. Ac., 258. ? *L. amaurus* Cope, l. c., 258.

Bright red, 18 to 22 pairs of black rings from head to vent, each pair inclosing a spotless yellow ring, which encircles the body, widening but little on the flanks. Belly between the yellow rings black. Top of head black, this color extending back upon the occipitals in an acute angle. A broad occipital yellow ring. (Kenn.)

Mexico.

Var. RHOMBOMACULATUS . . . .

Coronella rhombomaculata Holbr., 1842, Herp., III, 103, pl. 23; Jan, 1863, Sist., 47, — 1866, Icon., livr. 17, pl. II, f. 1—2. *Ophibolus rhombomaculatus* B. & G., 1853, Serp., 86; Bd., 1859, P. R. R. Rep., X, pl. 30, f. 60; Cope, 1875, Checklist, 37. *Lampropeltis rhombomaculatus* Cope, 1860, Pr. Phil. Ac., 255.

Top of head and back chestnut brown, with a vertebral series of rhomboid reddish-brown spots. Lower surface salmon-colored, more or less bright. Ventrals 211; subcaudals 45. (Holbr.)

Southeastern United States.

OPHIBOLUS GETULUS (Chain Snake) 68

Baird & Girard, 1853, Serp., 255; Bd., 1854, Serp. N. Y., 20, — 1859, P. R. R. Rep., X, pl. 31, f. 65. *Coluber getulus* Linn., 1766, Syst., I, 382; Gmel., 1788, Syst. Linn., I, 1106; Harl., 1827, Jour. Phil. Ac., 358, — 1835, Med. Res., 122; Peale, 1829, Macl. Lyc., I, pl. V; Gthr., 1858, Cat., 249. *Coronella getula* Holbr., 1842, Herp., III, 95, pl. 21; D. & B., 1854, Erp., VII, 616; Jan, 1863, Sist., 47, — 1865, Icon., livr. 14, pl. 5, f. 1. *Lampropeltis getula* Cope, 1860, Pr. Phil. Ac., 255. *Ophibolus getulus* subsp. *getulus* Cope, 1875, Checklist, 37, — 1880, Bull. 20, U. S. Mus., 23. *Pseudoelaps getulus* Fitz., 1826, Neue Class. Rept., 26.

Chain Snake Catesby, 1743, Carol., II, 52. Chain Snake; King Snake; Thunder Snake. Southern States to Texas.

Var. SAYI (King Snake) 68

Coronella sayi Holbr., 1842, Herp., 99, pl. 22; D. & B., 1854, Erp., VII, 619; Gthr., 1858, Cat., 41. *Coluber sayi* DeK., 1842, Rept., 41. *Herpetodryas getulus* Schleg., 1837, Essai, I, 153, II, 198. *Lampropeltis getulus* Fitz., 1843, Syst., 25. *Lampropeltis sayi* Cope, 1860, Pr. Phil. Ac., 254. *Ophibolus sayi* B. & G., 1853, Serp., pp. 84, 159, — 1854, Marcy's Exp., pl. 7; Bd., 1859, P. R. R. Rep., X, pl. 30, f. 59. *O. getulus* var. *sayi* Cope, 1875, Checklist, 37. *O. getulus sayi* Cope, 1880, Bull. 20, U. S. Mus., 23. *Coronella getulus* var. *sayi* Jan, 1863, Sist., 47, — 1865, Icon., livr. 14, pl. 5, f. 2. Mississippi Valley to Illinois and Texas.

OPHIDIA—Continued.

Var. BOYLII 69

Ophibolus boylii B. & G., 1853, Serp., 82; Bd., 1859, P. R. R. Rep., X, 11, pl. 30, f. 57, — 1859, Mex. Bound., II, Rept., 20; Cope, 1866, Pr. Phil. Ac., 305. *O. getulus* subsp. *boylii* Cope, 1875, Checklist, 37; Yarrow, 1875, Wheeler's Rep., V, 538; Coues, 1875, Wheeler's Rep., V, 618. *Coronella balteata* Hall., 1853, Pr. Phil. Ac., 236, — 1859, P. R. R. Rep., X, 14. ? *C. getula* Mart., 1856, Mus. Berl., 25. *C. getulus* var. *boylii* Jan, 1863, Sist., 47. *Lampropeltis boylii* Cope, 1860, Pr. Phil. Ac., 255. *L. boylii* var. *conjuncta* Cope, 1860, Pr. Phil. Ac., 255, — 1861, l. c., p. 301. *Coronella getulus* var. *pseudogetulus* Jan, 1863, Sist., 47, — 1865, Icon., livr. 12, pl. 6, f. 2.

California to Mexico.

Var. SPLENDIDUS . . . .

Ophibolus splendidus B. & G., 1853, Serp., 83; Bd., 1859, Mex. Bound., II, Rept., pl. 14, p. 20, — P. R. R. Rep., X, pl. 30, f. 58; Cope, 1866, Pr. Phil. Ac., 310. *Lampropeltis splendida* Cope, 1860, Pr. Phil. Ac., 255. *Ophibolus getulus* subsp. *splendidus* Cope, 1875, Checklist, 37; Coues, 1875, Wheeler's Rep., V, 619. *Coronella getulus* var. *splendida* Jan, 1863, Sist., 47, — 1865, Icon., livr. 12, pl. 6, f. 1.

Back black, crossed by 50 to 63 broad bands of light color, forming a spot in the middle of each scale. Nearly all scales on the flank, with more or less white in the center. The dorsal bands bifurcate on the flank, inclosing rhomboid spots of darker, which often extend upon the ventrals. Belly white, blotched with black.

Arizona and Southern California to Mexico.

Var. CALIFORNIAE. . . . .

Coluber (Ophis) californiae Blainv., 1835, Ann. Mus., IV, pl. 27, f. 1; B. & G., 1853, Serp., 153. *Coronella californiae* D. & B., 1854, Erp., VII, 623. *C. getulus* var. *californiae* Jan, 1863, Sist., 47, — 1865, Icon., livr. 14, pl. 5, f. 3. *Ophibolus californiae* Cope, 1875, Checklist, 37.

More yellow than black, the latter forming more or less effaced, anastomosing and broken longitudinal lines on the back. The vertebral lines darker. Oculars 1—2.

California.

Var. PYRRHOMELAS 67

Ophibolus pyrrhomelanus Cope, 1866, Pr. Phil. Ac., 305. *O. pyrrhomelas* Cope, 1875, Checklist, 37; Yarrow, 1875, Wheeler's Rep., V, 537. *O. pyrrhomelas* Coues, 1875, Wheeler's Rep., V, 619.

Arizona; Sonora.

LIOPHIS 69

Wagler, 1830, Amph., 187; D. & B., 1854, Erp., VII, 697; Gthr., 1858, Cat., 42.

LIOPHIS ELAPOIDES 69

Pliocercus elapoides Cope, 1860, Pr. Phil. Ac., 253; Peters, 1869, Mb., Berl. Akad., 876. *Elapochrus deppei* Peters, 1860, Mb. Berl. Akad., 263. *Liophis tricinctus* Jan, 1863, Sist., 53, — 1866, Icon., livr. 18, pl. 4, f. 4–6. Mexico.

OPHIDIA—Continued.

DIADOPHIS 70

Baird and Girard, 1853, Serp., 112.

DIADOPHIS ANNULATUS 70

Enicognathus annulatus D. & B., 1854, Erp., VII, 335, pl. 80, f. 1–3; Jan, 1863, Sist., 51, — 1866, Icon., livr. 16, pl. 4, f. 3.

Mexico.

DIADOPHIS DECORATUS 71

Cope, 1860, Pr. Phil. Ac., 250. *Coronella decorata* Gthr., 1858, Cat., 35. *Enicognathus vittatus* Jan, 1863, Sist., 50, — 1866, Icon., livr. 16, pl. 2, f. 2–3. *Rhadinea decorata* Cope, 1875, Jour. Phil. Ac., 138.

Southern Mexico.

DIADOPHIS FULVIVITTIS 71

Rhadinea fulvivitta Cope, 1875, Jour. Phil. Ac., 139.

Southern Mexico.

DIADOPHIS PUNCTATUS 72

Baird & Girard, 1853, Serp., 112; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 82; Cope, 1860, Pr. Phil. Ac., 250; Jan, 1863, Sist., 49, — 1866, Icon., livr. 15, pl. 6, f. 1; Bd., 1854, Serp. N. Y., 24; Allen, 1869, Pr. Bost. Soc., 182. *Coluber punctatus* Linn., 1766, Syst., I, 376; Gmel., 1788, Syst. Linn., I, 1089; Harl., 1827, Jour. Phil. Ac., 354, — 1835, Med. Res., 117; Storer, 1839, Rept. Mass., 225; Holbr., 1842, Herp., III, 81, pl. 18; DeK., 1842, Rept. N. Y., 39, pl. 14, f. 29; Jones, 1865, Rept. Nova Scotia, 5. *Calamaria punctata* Schleg., 1837, Essai, I, 132, II, 39. *Spilotes punctatus* Swains., 1839, Hist. Amph., II, 364. *Ablabes punctatus* D. & B., 1854, Erp., VII, 310; Gthr., 1858, Cat., 28. *Diadophis punctatus* subsp. *punctatus* Cope, 1875, Checklist, 37. *D. punctatus* var. *pallidus* Cope, 1860, Pr. Phil. Ac., 250.

Southern and Eastern States to Nova Scotia.

Var. ARNYI 72

Diadophis arnyi Kenn., 1859, Pr. Phil. Ac., 99; Cope, 1875, Checklist, 38. *Liophis* (*Diadophis*) *arnyi* Gthr., 1868, Ann. Mag., 413. *Diadophis punctatus* var. *arnyi* Jan, 1863, Sist., 49, — 1866, Icon., livr. 15, pl. 6, f. 5. *D. dysopes* Cope, 1860, Pr. Phil. Ac., 251, — 1875, Checklist, 38. *D. punctatus* var. *laetus* Jan, 1863, Sist., 49, — 1866, Icon., livr. 15, pl. 6, f. 6.

Illinois to Arkansas.

Var. DOCILIS 72

Diadophis docilis B. & G., 1853, Serp., 114; ? Bd., 1859, P. R. R. Rep., X, pl. 32, f. 1, pl. 33, f. 84; Coues, 1875, Wheeler's Rep., V, 623. *D. punctatus* var. *docilis* Jan, 1863, Sist., 49, — 1866, Icon., livr. 15, pl. 6, f. 2. *Ablabes occipitalis* Gthr., 1858, Cat., 29. *Diadophis occipitalis* Cope, 1860, Pr. Phil. Ac., 250. *D. punctatus* var. *stictogenys* Cope, 1860, Pr. Phil. Ac., 250, — 1875 (subspecies), Checklist, 37, — 1880, Bull. 20, U. S. Mus., 23. *D. texensis* Kenn., 1860, Pr. Phil. Ac., 328.

Texas to Mexico.

OPHIDIA—Continued.

Var. AMABILIS . . . .

Jan, 1863, Sist., 49, — 1866, Icon., livr. 15, pl. 6, f. 4. *Diadophis amabilis* B. & G., 1853, Serp., 113; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 83. *Diadophis pulchellus* B. & G., 1853, Serp., 115; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 85; Yarrow, 1875, Wheeler's Rep., V, 538. *D. punctatus* var. *pulchellus* Cope, 1860, Pr. Phil. Ac., 250; Jan, 1863, Sist., 49, — 1866, Icon., livr. 15, pl. 6, f. 3.

Greenish to blackish-brown, punctulate with black. Belly orange, more or less sprinkled or spotted with black. Occipital ring moderate. Scales in 15 rows. Ventrals 184 to 204. Subcaudals 59 to 60.

Arizona to California.

DIADOPHIS REGALIS 73

Baird & Girard, 1853, Serp., 115, 161; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 86; Coues, 1875, Wheeler's Rep., V, 623; Cope, 1875, Check-list, 38.

Mexico.

RHINOCHEILUS 73

Baird & Girard, 1853, Serp., 120.

RHINOCHEILUS LECONTEI 73

B. & G., 1853, Serp., 120, 161; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 90; Cope, 1866, Pr. Phil. Ac., 304; Jan, 1863, Prodr. Icon. Ofid., II, — 1863, Sist., 43, — 1876, Icon., livr. 48, pl. 3, f. 1; Coues, 1875, Wheeler's Rep., V, 623; Cope, 1875, Checklist, 36, — 1880, Bull. 20, U. S. Mus., 23.

Texas to California.

Var. TESSELLATUS var. n. 74

Mexico.

HETERODON 74

(Pal. de Beauv., 1799) Latr., 1802, Rept., IV, 32; Fitz., 1826, Class., 56; Gray, 1831, Synops. (An. King. Griff., IX), 85; Troost, 1836, Ann. N. Y. Lyc., III, 183; Schleg., 1837, Essai, II, 96; Holbr., 1842, Herp., III, 37; B. & G., 1853, Serp., 51; D. & B., 1854, Erp., VII, 764; Gthr., 1858, Cat., 82.

HETERODON PLATYRHINUS (Hog-nose Snake) 75

Latreille, 1802, Rept., IV, 32, pl. 28, f. 1-3; Holbr., 1838, Herp., II, 97, pl. 21, — 1842, Herp., IV, pl. 17; B. & G., 1853, Serp., 51; Bd., 1859, P. R. R. Rep., X, pl. 28, f. 38; Stor., 1839, Rept., Mass., 231; D. & B., 1854, Erp., VII, 766; Gthr., 1858, Cat., 82; Jan, 1863, Sist., 44, — 1876, Icon., livr. 48, pl. 3, f. 2; Cope, 1875, Checklist, 43, — 1877, Pr. Am. Phil. Soc., 64; DeK., 1842, Rept. N. Y., 55; Bd., 1854, Serp. N. Y., 18; Allen, 1869, Pr. Bost. Soc., 182. *H. cognatus* B. & G., 1853, Serp., 54; Bd., 1859, Mex. Bound. Surv., II, 17, — P. R. R. Rep., X, pl. 28, f. 39. *Coluber heterodon* Daud., 1803, Rept., VII, 153, pl. 60, f. 28; Say, 1818, Am. Jour. Sci., I, 261; Harl., 1827, Jour. Phil. Ac., 357, — 1835, Med. Res., 120. *H. tigrinus* Troost, 1836, Ann. N. Y. Lyc., III, 189; DeK., 1842, Rept. N. Y., 52. *Hog-nose Snake* Catesby, 1743, Carol., II, 56.

Eastern, Middle, and Southern States.

OPHIDIA—Continued.

Var. NIGER 76

Jan, 1863, Sist., 44. *Heterodon niger* Troost, 1836, Ann. N. Y. Lyc., 186; Holbr., 1838, Herp., II, 105, pl. 23, — 1842, Herp., IV, 63, pl. 16; DeK., 1842, Rept. N. Y., 52; B. & G., 1853, Serp., 55; D. & B., 1854, Erp., VII, 769; Gthr., 1858, Cat., 83; Bd., 1859, P. R. R. Rep., X, pl. 28, f. 40. *H. atmodes* B. & G., 1853, Serp., 57; Bd., 1859, P. R. R. Rep., X, pl. 28, f. 41. *H. platyrhinus* subsp. *atmodes* Cope, 1875, Checklist, 43. *Scytale niger* Daud., 1803, Rept., V, 342; Harl., 1827, Jour. Phil. Ac., 367, — 1835, Med. Res., 130. *Coluber cacodaemon* Shaw, 1802, Zoöl., III, 377, pl. 102. *C. thraso* Harl., 1835, Med. Res., 120. *Heterodon annulatus* Troost, 1836, Ann. Lyc. N. Y., III, 188; DeK., 1842, Rept. N. Y., 52. *The Black Viper* Catesby, 1743, Carol., II, 44. Southern States east of the Mississippi.

HETERODON SIMUS 76

Holbr., 1842, Herp., ~~III~~ IV, 57, pl. 15; DeK., 1842, Rept. N. Y., 52; B. & G., 1853, Serp., 59; Mart., 1856, Mus. Berl., 29; Bd., 1859, P. R. R. Rep., X, pl. 28, f. 42, 42 b. *H. platyrhinus* Schleg., 1837, Essai, I, 140, II, pl. 3, f. 20–22. *Coluber simus* Linn., 1766, Syst., I, 375; Gmel., 1788, Syst., Linn., I, 1086. *H. simus* subsp. *simus* Cope, 1875, Checklist, 43. Mississippi Valley to the Atlantic.

Var. NASICUS 77

Heterodon nasicus B. & G., 1852, Stansbury's Exp., 352, — 1854, Marcy's Exp., 193, pl. 4, — 1853, Serp., 61, 157; Bd., 1859, P. R. R. Rep., X, pl. 28, f. 43; Hall., 1853, Sitgreave's Exp., 147, — 1856, Pr. Phil. Ac., 249; Bd., 1859, P. R. R. Rep., X, Whipple's 41, Beckwith's 19, — 1859, Mex. Bound., II, Rept., 18, pl. 11, f. 1; Hayd., 1862, Trans. Am. Phil. Soc., 177; Cope, 1866, Pr. Phil. Ac., 307; Allen, 1874, Pr. Bost. Soc., 69; Jan, 1863, Sist., 46; — 1865, Icon., livr. 10, pl. 5. *H. catesbyi* Gthr., 1858, Cat., 83. *H. simus* subsp. *nasicus* Cope, 1875, Checklist, 43; Yarrow, 1875, Wheeler's Rep., V, 555; Coues, 1875, Wheeler's Rep., V, 611. California to Texas and Nebraska.

Var. KENNERLYI 77

Heterodon kennerlyi Kenn., 1860, Pr. Phil. Ac., 336; Jan, 1865, Icon., livr. 10, pl. 5, f. 2. Sonora, Mexico.

CEMOPHORA 77

Cope, 1860, Pr. Phil. Ac., 244.

CEMOPHORA COCCINEA 78

Cope, 1860, Pr. Phil. Ac., 244; Jan, 1863, Sist., 45, — 1865, Icon., livr. 11, pl. 5, f. 2; Cope, 1875, Checklist, 36, — 1877, Pr. Am. Phil. Soc., 65. *Coluber coccineus* Blumenbach, 1788, Licht. & Voigt, Mag., pl. V; Gmel., 1788, Syst. Linn., I, 1097; Latr., 1802, Rept., IV, 138; Daud., Rept., VII, pl. 83, f. 1; Harl., 1827, Jour. Phil. Ac., 356, — 1835, Med. Res., 119. *Heterodon coccineus* Schleg., 1837, Essai, I, 141, II, 102, pl. 3, f. 15, 16. *Simotes coccineus* D. & B., 1854, Erp., VII, 637, pl. 82, f. 2; Mart., 1856, Mus. Berl., 25; Gthr., 1858, Cat., 26. *Rhinostoma coccinea* Holbr., 1842, Herp., III, 125, pl. 30; B. & G., 1853, Serp., 118; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 89. *Elaps coccineus* Merr., 1820, Syst. Amph., 145. Southern States east of Texas.

OPHIDIA—Continued.

Var. copei 78

Cemophora copei Jan, 1863, Sist., 45, — Icon., livr. 11, pl. 5, f. 3.

Tennessee.

Xenodon 79

Boie, 1827, Isis, 541; Schleg., 1837, Essai, II, p. 80; D. & B., 1854, Erp., VII, 753; Gthr., 1858, Cat., 53; Jan, 1863, Arch. Zoöl., 106.

Xenodon bertholdi 79

Jan, 1863, Arch. Zoöl., II, 108, — 1863, Sist., 56, — 1866, Icon., livr. 19, pl. 4, f. 2. A variety of *X. colubrinus*, from Para, of Guenther.

Mexico.

Hypsiglena 79

Cope, 1860, Pr. Phil. Ac., 246.

Hypsiglena ochrorhyncha 80

H. ochrorhynchus Cope, 1860, Pr. Phil. Ac., 246, — 1875, Checklist, 38.

Lower California.

Var. chlorophaea . . . .

Hypsiglena chlorophaea Cope, 1860, Pr. Phil. Ac., 247. *H. ochrorhynchus* var. *chlorophaea* Cope, 1866, Pr. Phil. Ac., 304. *H. ochrorhynchus* subsp. *chlorophaea* Cope, 1875, Checklist, 38. *H. ochrorhyncha chlorophaea* Coues, 1875, Wheeler's Rep., V, 622.

More slender. Colors darker; spots black. Ventrals 167. Subcaudals 55 pairs.

Arizona to Sonora.

CALAMARINAE 81

Calamaridae Gthr., 1858, Cat., 2; Jan, 1862, Arch. Zoöl., I.

Ficimia 81

Gray, 1849, Cat. Serp., 80.

Ficimia frontalis 82

Toluca frontalis Cope, 1864, Pr. Phil. Ac., 167.

Colima, Mexico.

Ficimia cana 83

Gyalopion canum Cope, 1860, Pr. Phil. Ac., 243, 310, — 1875, Checklist, 36; Coues, 1875, Wheeler's Rep., V, 624, pl. 18, f. 2.

Arizona.

Ficimia nasus 83

Conopsis nasus Gthr., 1858, Cat., 6. California.

Ficimia lineata . . . .

Toluca lineata (Kenn.) Bd., 1589, Mex. Bound., II, Rept., 23, pl. 21, f. 2, — 1859, P. R. R. Rep., X, pl. 35, f. 8; Cope, 1860, Pr. Phil. Ac., 241. *Oxyrhina de Filippii* Jan, 1862, Arch. Zoöl., II, pp. 54, 61, — 1863, Sist., 41. *Stenorhina de Filippii* Jan, 1857, Ind. Rett. Mus. Milan, 48. *Stenorhina varians* Jan, 1857, Ind. Rett. Mus. Milan, 48. *Oxyrhina varians* Jan, 1862, Arch. Zoöl., II, pp. 54, 60, — 1863, Sist., 41.

Body stout; head short, indistinct, pointed; snout acute, prominent; crown arched; tail short, about one sixth of total. Rostral

OPHIDIA—Continued.

large, turned back on the top of the snout. Frontal large, anterior angle separating the prefrontals. Nasal entire. No loreal. Oculars 1—2. Labials 7, first small. Infralabials 6. Scales smooth, in 17 rows, outer row broader than long. Anal bifid. Subcaudals in two rows. Uniform light-brownish ash above, with three imperfect longitudinal stripes of blackish, each on a single row of scales.

Mexico.

Ficimia maculata 84

Oxyrhina maculata Jan, 1862, Arch. Zoöl., II, 54, 61, — 1863, Sist., 41, — 1876, Icon., livr. 48, pl. 2, f. 2–4.

Mexico.

Ficimia variegata 84

Cope, 1866, Pr. Phil. Ac., 126. *Amblymetopon variegatum* Gthr., 1858, Cat. 7.

Mexico.

Ficimia olivacea 84

Gray, 1849, Cat. Serp., 80; Cope, 1863, Pr. Phil. Ac., 126, — 1866, Pr. Phil. Ac., 132; Peters, 1869, Mb. Berl. Akad., 875; Steind., 1870, Sitzungsb. Ak. Wien, 344, pl. 6.

Mexico.

Cheilorhina 85

Jan, 1862, Arch. Zoöl., II, 57.

Cheilorhina villarsii 85

Jan, 1862, Arch. Zoöl., II, 57, — 1863, Sist., 41, — 1876, Icon., livr. 48, pl. 1, f. 5.

Western Mexico.

Stenorhina 85

Dum. Bibr., 1854, Erp., VII, 865.

Stenorhina freminvillei 85

D. & B., 1854, Erp., VII, 868. *S. degenhardtii* var. *freminvillei* Jan, 1862, Arch. Zoöl., II, 65, — 1863, Sist., 41. ? *Bergenia mexicana* Steind., 1867, Novara Exp., Rept., 92.

Central America and Mexico.

Stenorhina quinquelineata 86

Microphis quinquelineatus Hall., 1854, Pr. Phil. Ac., 97. *S. degenhardtii* var. *quinquelineata* Jan, 1862, Arch. Zoöl., 55, 65. *Stenorhina quinquelineata* Cope, 1860, Pr. Phil. Ac., 243.

Mexico.

Tantilla 86

Baird & Girard, 1853, Serp., 131.

Tantilla grácilis 87

B. & G., 1853, Serp., 132, 161; Cope, 1866, Pr. Phil. Ac., 126, — 1875, Checklist, 35, — 1880, Bull. 20, U. S. Mus., 20; Bd., 1859, Mex. Bound., II, Rept., 23. *Homalocranion gracile* Jan, 1862, Arch. Zoöl., II, 50, — 1863, Sist., 39, — 1866, Icon., livr. 15, pl, 2, f. 1.

Texas.

OPHIDIA—Continued.

Var. HALLOWELLII . . . .

Tantilla Hall., 1856, Pr. Phil. Ac., 246. *T. Hallowellii* Cope, 1860, Pr. Phil. Ac., 77, — 1866, Pr. Phil. Ac., 126, — 1875, Checklist, 35.

Oculars 1—1. No loreal. Frontal broad, short, hexagonal. Temporals 2. Labials 6, third and fourth in orbit, fourth to sixth large. Infralabials 6, fourth largest. Scales smooth, in 15 rows, outer larger. Ventrals 130. Anal entire. Subcaudals 42 pairs. Light brown or olive above; light beneath. A vertebral narrow dark-colored line from the back of the head.

Kansas.

Var. CALAMARINA 87

Tantilla calamarina Cope, 1866, Pr. Phil. Ac., 320. *T. bimaculata* Cope, 1875, Rept. Costa Rica, 143.

Guadalaxara, Mexico.

TANTILLA NIGRICEPS 88

Kennicott, 1860, Pr. Phil. Ac., 328; Cope, 1866, Pr. Phil. Ac., 126, — 1875, Checklist, 35, — 1880, Bull. 20, U. S. Mus., 20; Coues, 1875, Wheeler's Rep., V, 626. *Scolecophis fumiceps* Cope, 1860, Pr. Phil. Ac., 371, — 1861, Pr. Phil. Ac., 74.

Texas and New Mexico.

TANTILLA CORONATA 88

Baird & Girard, 1853, Serp., 131; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 96; Cope, 1866, Pr. Phil. Ac., 126, — 1875, Checklist, 35, — 1877, Pr. Am. Phil. Soc., 65. *Homalocranion melanocephalum* Jan, 1862, Arch. Zoöl., II, 50, 51 (mixed).

Gulf States.

Var. WAGNERI 88

Homalocranion wagneri Jan, 1862, Arch. Zoöl., II, 50, 51, — 1863, Sist., 40, — 1866, Icon., livr. 15, pl. 2, f. 3.

Florida.

TANTILLA PLANICEPS 89

Cope, 1875, Checklist, 35 (name). *Coluber planiceps* Blainv., 1835, Nouv. Ann. Mus. Paris, IV, 294, pl. 27, f. 3; B. & G., 1853, Serp., 154. *Homalocranion planiceps* Dum., 1852, Mem. Ac. Sci., XXIII, 490; D. & B., 1854, Erp., VII, 857; Jan, 1862, Arch. Zoöl., II, 51, 55, — 1863, Sist., 40, — 1866, Icon., livr. 15, pl. 2, f. 2.

California.

ELAPOMORPHUS 89

(Wiegmann) Fitz., 1843, Syst. Rept., 25.

ELAPOMORPHUS MEXICANUS 89

Guenther, 1862, Ann. Mag. Nat. Hist., pl. 9, f. 1 (extr. p. 6).

Mexico.

CONTIA 90

Baird and Girard, 1853, Serp., 110.

OPHIDIA—Continued.

(SONORA.)

CONTIA SEMIANNULATA 90

Sonora semiannulata B. & G., 1853, Serp., 117; Bd., 1859, Mex. Bound., II, Rept., 21, pl. 19, f. 3, — P. R. R. Rep., X, pl. 33, f. 88; Cope, 1875, Checklist, 36.

Sonora.

CONTIA OCCIPITALIS 91

Rhinostoma occipitale Hall., 1854, Pr. Phil. Ac., 95, — 1856, Pr. Phil. Ac., 311, — 1859, P. R. R. Rep., X, Rept., 15. *Lamprosoma occipitale* Bd., 1859, Mex. Bound., II, Rept., 21, pl. 21, f. 1, — P. R. R. Rep., X, pl. 35, f. 67. *Chionactis occipitalis* Cope, 1860, Pr. Phil. Ac., 241, — 1875, Checklist, 35.

Arizona.

Var. ANNULATA. 91

Lamprosoma annulatum Bd., 1859, Mex. Bound., II, 22. *Chionactis occipitalis* subsp. *annulata* Cope, 1875, Checklist, 36.

Arizona.

CONTIA ISOZONA 92

Cope, 1866, Pr. Phil. Ac., 304, — 1875, Checklist, 36; Yarrow, 1875, Wheeler's Exp., V, 537, pl. 18, f. 1.

Arizona to Utah.

(PROCINURA.)

CONTIA AEMULA (? position) 92

Procinura aemula Cope, 1879, Pr. Am. Phil. Soc., 262.

Mexican Plateau.

(CONTIA.)

CONTIA PYGAEA. 93

Cope, 1871, Pr. Phil. Ac., 223, — 1875, Checklist, 36, — 1877, Pr. Am. Phil. Soc., 65.

Florida.

CONTIA MITIS 93

Baird & Girard, 1853, Serp., 110; Bd., 1859, P. R. R. Rep., X, pl. 36, f. 7; Cope, 1860, Pr. Phil. Ac., 251, — 1861, Pr. Phil. Ac., 74. *Ablabes purpureocauda* Gthr., 1858, Cat., 245. *Homalosoma mite* Jan, 1862, Arch. Zoöl., II, 33, 35, — 1863, Sist., 36, — 1865, Icon., livr. 13, pl. 4, f. 1.

California.

CONTIA EPISCOPA 94

Cope, 1860, Pr. Phil. Ac., 251, — 1875, Checklist, 36, — 1880, Bull. 20, U. S. Mus., 20. *Lamprosoma episcopum* Kenn., 1859, Mex. Bound., II, Rept., 22, pl. 8, f. 2. ? *Contia episcopa* subsp. *torquata* Cope, 1880, Bull. 20, U. S. Mus., 20. *C. episcopa* subsp. *episcopa* Cope, *l. c.*, 20. *Homalosoma episcopum* Jan, 1862, Arch. Zoöl., II, 33, 35, — 1863, Sist., 37, — 1865, Icon., livr. 13, pl. 4, f. 2.

Texas.

OPHIDIA—Continued.

Lodia . . . .

Baird & Girard, 1853, Cat. N. A. Serp., 116.

Head distinct. Frontal divided transversely. Nasal in two parts. Loreal entering orbit, fused with the lower anteocular. Oculars 1—2. Mentals one pair. Eyes rather large, pupil round. Scales smooth. Anal bifid. Subcaudals in two rows.

Lodia tenuis . . . .

B. & G., 1853, Serp., 116; Bd., 1859, P. R. R. Rep., X, pl. 36, f. 8; Cope, 1875, Checklist, 36. *Calamaria tenuis* B. & G., 1852, Pr. Phil. Ac., 176.

Body slender, subcylindrical; tail short, conical, tapering. Frontal hexagonal, lateral borders parallel. A small subelliptical shield between prefrontals and frontal. Internasals subtriangular, about half as large as prefrontals. Rostral broad. Nasal in two parts, nostril between. Loreal large, elongate, entering the orbit, fused with lower anteocular. Oculars 1—2. Anterior temporal largest, elongate. Labials 6. Infralabials 6, fourth largest. One pair of mentals. Scales rather large, smooth, in 15 rows, outer broader. Ventrals 150. Anal entire. Subcaudals 33 pairs. Brown above, bluish laterally, with a longitudinal stripe of lighter on each flank. Belly lighter, bases of scutes bluish.

Oregon and Washington Territories.

Ninia 94

B. & G., 1853, Serp., 49. *Streptophorus* D. & B., 1854, Erp., VII, 514.

Ninia liebmanni 95

Chersodromus liebmanni Reinh., 1860, Vid. Medd. Kjobenh., 35, pl. IV, f. 10, 11; Cope, 1861, Pr. Phil. Ac., 302; Jan, 1862, Arch. Zoöl., II, 25, — 1865, Icon., livr. 12, pl. 3, f. 2.

Vera Cruz, Mexico.

Ninia sebae 95

Cope, 1860, Pr. Phil. Ac., 340. *Streptophorus sebae* D. & B., 1854, Erp., VII, 515; Gthr., 1858, Cat., 16; Jan, 1862, Arch. Zoöl., II, 26, 27, — 1863, Sist., 34, — 1865, Icon., livr. 12, pl. 3, f. 4; Mart., 1856, Mus. Berl., 28.

Mexico.

Ninia collaris 95

Streptophorus sebae var. *collaris* Jan, 1865, Icon., livr. 12, pl. 3, f. 6.

Mexico.

Ninia sieboldi 96

Elapoides sieboldi Jan, 1862, Arch. Zoöl., II, 21, — 1863, Sist., 33, — 1865, Icon., livr. 12, pl. 1, f. 4.

Mexico.

Ninia diademata 96

B. & G., 1853, Serp., 49; Bd., 1859, P. R. R. Rep., X, pl. 27, f. 37. *Tropidonotus dimidiatus* Cope, 1861, Pr. Phil. Ac., 297. *Streptophorus bifasciatus* D. & B., 1854, Erp., VII, 520; Cope, 1860, Pr. Phil. Ac., 77; Jan, 1862, Arch. Zoöl., II, 26, — 1863, Sist., 34, — 1865, Icon., livr. 12, pl. 3, f. 3. Mexico.

OPHIDIA—Continued.

Southeastern States.

VIRGINIA 96

B. & G., 1853, Serp., 127

VIRGINIA STRIATULA 97

Coluber striatulus Linn., 1766, Syst., I, 375; Gmel., 1788, Syst. Linn., I, 1087; Daub., 1784–92, Encycl. Meth., II, 684; Latr., 1802, Rept., IV, 84; Daud., 1803, Rept., VII, 200; Merr., 1820, Syst., 118; Harl., 1827, Jour. Phil. Ac., V, 354, — 1835, Med. Res., 117. *Calamaria striatula* Schleg., 1837, I, 133, II, 43; Holbr., 1842, Herp, III, 123, pl. 29. *Haldea striatula* B. & G., 1853, Serp., 122; Mart., 1856, Mus. Berl., 23; Bd., 1859, P. R. R. Rep., X, pl. 32, f. 91; Cope, 1875, Checklist, 35, — 1880, Bull. 20, U. S. Mus., 20. *Conocephalus striatulus* D. & B., 1854, Erp., VII, 140; Gthr., 1858, Cat., 17; Jan, 1862, Arch. Zoöl., II, 24, — 1863, Sist., 34, — Icon., livr. 12, pl. 3, f. 1.

Virginia to Texas.

VIRGINIA INORNATA sp. n. 97

Texas.

VIRGINIA ELEGANS 98

Kenn., 1859, Pr. Phil. Ac., 99; Jan, 1862, Arch. Zoöl., II, 24, — 1863, Sist., 34, — 1865, Icon., livr. 12, pl. 2, f. 6; Cope, 1880, Bull. 20, U. S. Mus., p. 20.

Southern Illinois.

VIRGINIA VALERIAE 98

B. & G., 1853, Serp., 127; Bd., 1859, P. R. R. Rep., X, pl. 33, f. 94; Jan, 1862, Arch. Zoöl., II, 24, — 1863, Sist., 34, — 1865, Icon., livr. 12, pl. 2, f. 5; Cope, 1880, Bull. 20, U. S. Mus., p. 20.

Maryland to Georgia and Illinois.

Var. HARPERTI 99

Carphophis harperti D. & B., 1854, Erp., VII, 135; Cope, 1880, Bull. 20, U. S. Mus., 20. *Virginia harperti* Cope, 1875, Checklist, 35. *V. valeriae* Jan, 1863, Sist., 34. *Celuta harperti* Mart., 1856, Mus. Berl., 23.

Georgia to Texas.

CARPHOPHIS 99

Gervais, 1843, D'Orb. Dict. d'Hist. Nat., III, 191; D. & B., 1854, Erp., VII, 133. *Celuta* B. & G., 1853, Serp. 129

CARPHOPHIS STRAMINEA 99

Chilomeniscus stramineus Cope, 1860, Pr. Phil. Ac., 33, — 1861, Pr. Phil. Ac., 302, — 1875, Checklist, 35.

Lower California.

CARPHOPHIS CINCTA 100

Chilomeniscus cinctus Cope, 1861, Pr. Phil. Ac., 303, — 1875, Checklist, 35. *C. ephippicus* Cope, 1867, Pr. Phil. Ac., 85, — 1875, Checklist, 35.

Guaymas, Sonora.

CARPHOPHIS HELENAE 100

Celuta helenae Kenn., 1859, Pr. Phil. Ac., 100. *Carphophiops helenae* Cope, 1875, Checklist, 34. *Carphophis amoena* var. *helenae* Jan, 1862, Arch. Zoöl., 23, — 1863, Sist., 33. Illinois to Mississippi.

OPHIDIA—Continued.

CARPHOPHIS AMOENA ("Ground Snake") 100

Gervais, 1843, D'Orb. Dict. d'Hist. Nat., III, 191; D. & B., 1854, Erp., VII, 131; Gthr., 1858, Cat., 18; Cope, 1860, Pr. Phil. Ac., 79; Jan, 1862, Arch. Zoöl., 23, — 1863, Sist., 33, — 1865, Icon., livr. 12, pl. 2, f. 4; Allen, 1869, Pr. Bost. Soc., 182. *Coluber amoenus* Say, 1825, Jour. Phil. Ac., IV, 237; Harl., 1827, Jour. Phil. Ac., 355, — 1835, Med. Res., 118; Storer, 1839, Rept. Mass., 226; Linsley, 1844, Am. Jour., vol. 45, p. 43. *Brachyorrhos amoenus* Holbr., 1842, Herp., III, 115, pl. 27. *Carphophiops vermiformis* Gerv., 1843, Dict. Hist. Nat., III, 191. *C. amoenus* Cope, 1875, Checklist, 34. *Calamaria amoena* Schleg., 1837, Essai, I, 130, II, 31, pl. 1, f. 19–20. *Celuta amoena* B. & G., 1853, Serp., 129; Mart., 1856, Mus. Berl., 23; Baird, 1854, Serp. N. Y., 25, — 1859, P. R. R. Rep., X, pl. 33, f. 95.

Massachusetts to Illinois and southward.

Var. VERMIS 101

Celuta vermis Kenn., 1859, Pr. Phil. Ac., 99. *Carphophiops vermis* Cope, 1875, Checklist, 34.

Missouri and southward.

GEOPHIS 101

Wagler, 1830, Syst. Amph., 342.

GEOPHIS SEMIDOLIATUS 102

Peters, 1859, Mb. Berl. Akad., 275. *Rabdosoma semidoliatum* D. & B., 1854, Erp., VII, 93. *Rhabdosoma semidoliatum* Gthr., 1858, Cat., 10; Mart., 1856, Mus. Berl., 23; Cope, 1860, Pr. Phil. Ac., 78. *Catostoma semidoliatum* Cope, 1860, Pr. Phil. Ac., 339. *Elapoides semidoliatus* Jan, 1862, Arch. Zoöl., 21, 22, — 1863, Sist., 33, — 1865, Icon., livr. 12, pl. 2, f. 1.

Mexico.

GEOPHIS BICOLOR 102

Guenther, 1868, Ann. Mag. Nat. Hist., 413.

Valley of Mexico.

GEOPHIS LATIFRONTALIS sp. n 103

San Luis Potosi, Mexico.

GEOPHIS LIPPIENS 103

Sympholis lippiens Cope, 1861, Pr. Phil. Ac., 524

Guadalaxara, Mexico.

TOXICOPHIDIA (Venomous Snakes) 104

PROTEROGLYPHA 104

CONOCERCA 104

ELAPIDAE 104

Gthr., 1858, Cat., 209.

ELAPS 104

Schneider, 1801, Hist. Amph., II, 289.

ELAPS FULVIUS ("Harlequin Snake") 105

Cuvier, 1817, Regn. Anim., II, 84; Fitz., 1826, Neue Class., 61; Holbr., 1838, Herp., II, 87, pl. 18, — 1842, Herp., III, 49, pl. X; B. & G., 1853, Serp., 21; D. & B., 1854, Erp., VII, 1215; Gthr., 1858, Cat., 235; Bd., P. R. R. Rep., X, pl. 25, f. 15; Cope, 1859, Pr. Phil. Ac., 344, — 1875, Checklist, 34, — 1880, Bull. 20, U. S. Mus., 23; Jan, 1859, Rev. & Mag. Zoöl. (Extr., p. 6), — 1863, Sist., 113, — 1872, Icon., livr. 42, pl. 2, f. 1; Dum. Boc., 1874, Miss. Sci. Mex., pl. 23; Audubon, Ornithol., I, pl. 44. *Coluber fulvius* Linn., 1766, Syst., I, 381; Gmel., 1788, Syst. Linn., I, 1104; Latr., 1802, Rept., IV, 140; Shaw, 1802, Zoöl., III, 469; Daud., 1803, Rept., VI, 300; Say, 1825, Am. Jour. Sci., I, 262. *Vipera fulvia* Harl., 1827, Jour. Phil. Ac., 364, — 1835, Med. Res., 127. *Le Noire et fauve* LaC., 1789, Quad. Ovip. et Serp., II, 299. ? *Elaps fulvius* var. *hypostema* Jan. 1863, Sist., 113.

Southern States east of the Mississippi.

Var. NIGROCINCTUS 106

Elaps nigrocinctus Grd., 1854, Pr. Phil. Ac., 226, — 1855, Gilliss' Exp., II, 210; Cope, 1859, Pr. Phil. Ac., 345; Sumichrast, 1881, Bull. Soc. Zoöl. de France, 184. *E. divaricatus* Hall., 1855, Jour. Phil. Ac., 36. *E. fitzingeri* Jan, 1859, Rev. & Mag. Zoöl, pp. 5 and 10. *E. fulvius* var. *fitzingeri* Jan, 1863, Sist., 113, — 1872, Icon., livr. 42, pl. 2, f. 3.

Central America to Mexico.

Var. AFFINIS 106

Jan, 1863, Sist., 113, — 1872, Icon., livr. 42, pl. 1, f. 2. *Elaps affinis* Jan, 1859, Rev. & Mag. Zoöl., pp. 6 and 14, pl. B, f. 2.

Mexico.

Var. BIPUNCTIGER . . . .

Elaps bipunctiger D. & B., 1854, Erp., VII, 1227. *Elaps distans* Kenn., 1860, Pr. Phil. Ac., 338; Cope, 1875, Checklist, 34. *E. ornatissimus* Jan, 1859, Rev. & Mag. Zoöl. (Extr. pp. 5 and 10, pl. A, f. 3), — 1863, Sist., 113, — 1872, Icon., livr. 42, pl. 1, f. 1.

Scales unicolor. Throat white, perhaps yellowish in life. Vertex black, followed by a collar of white or red. The specimen described had forty-three circles of white or red. The rings were narrow, occupying but two of the ventrals. Muzzle without a black spot. The name bipunctiger was given on account of a couple of light-colored spots in the black of the crown. Tip of tail black.

Mexico; Florida.

TOXICOPHIDIA—Continued.

Var. TENER . . . .

Elaps tenere B. & G., 1853, Serp., pp. 22, 156; Bd., 1859, P. R. R. Rep., X, pl. 25, f. 16. *E. tristis* B. & G., 1853, Serp., 23; Bd., 1859, P. R. R. Rep., X, pl. 25, f. 17. *E. fulvius* subsp. *tener* Cope, 1875, Checklist, 34.

Anterior portion of head black. A yellow occipital ring. Black rings fifteen in number. Red rings broadest. Yellow rings about half as wide as the black, and twice as many as either black or red. Tip of tail black. Ventrals 224 to 227. Subcaudals 26 to 38.

Texas.

Var. APIATUS 106

Jan, 1863, Sist., 113. *Elaps apiatus* Jan, 1859, Rev. & Mag. Zoöl. (Extr., pp. 6, 11, pl. A, f. 4).

Vera Cruz.

Var. EPISTEMA 106

Elaps epistema D. & B., 1854, Erp., VII, 1222; Gthr., 1858, Cat., 236; Jan, 1859, Rev. & Mag. Zoöl. (Extr., p. 6), — 1863, Sist., 113.

Mexico.

Var. DIASTEMA 107

Jan, 1863, Sist., 113. *Elaps diastema* D. & B., 1854, Erp., VII, 1222; Sumichr., 1881, Bull. Soc. Zoöl. de France, 185.

Mexico.

Var. CEREBRIPUNCTATUS 107

Elaps cerebripunctatus Pet., 1869, Mb. Berl. Akad., 877.

Pueblo, Mexico.

ELAPS EURYXANTHUS 107

Kenn., 1860, Pr. Phil. Ac., 337; Cope, 1861, Pr. Phil. Ac., 296, — 1866, Pr. Phil. Ac., 307, — 1875, Checklist, 34; Coues, 1875, Wheeler's Rep., V, 611.

Arizona to Mexico.

ELAPS LATICOLLARIS 107

Elaps marcgravii var. *laticollaris* Pet., 1869, Mb. Berl. Akad., 877.

"Pueblo, Mexico."

ELAPS DECORATUS 108

Jan, 1859, Rev. & Mag. Zoöl. (Extr., pp. 7, 14, pl. B, f. 5), — 1863, Sist., 114, — 1872, Icon., livr. 42, pl. 6, f. 4.

Mexico.

ELAPS ELEGANS 108

Jan, 1859, Rev. & Mag. Zoöl. (Extr., pp. 6, 13, pl. B, f. 1), — 1863, Sist., 114, — 1872, Icon., livr. 42, pl. 5, f. 2; Cope, 1861, Pr. Phil. Ac., 295.

Mexico.

PLATYCERCA 109

HYDROPHIDAE 109

PELAMIS 109

Daudin, 1803, Rept., VII, 357.

TOXICOPHIDIA—Continued.

PELAMIS PLATURA. . . . .

Anguis platura Linn., 1766, Syst., I, 391. *Hydrophis platura* Latr., 1802, Rept., IV, 197. *Hydrus bicolor* Schneid., 1801, Amph., I, 242; Shaw, 1802, Zoöl., III, 566. *Pelamis bicolor* Daud., 1803, Rept., VII, 366, pl. 89; Merr., 1820, Syst., 138; Gray, 1842, Zoöl. Misc., 60, — 1849, Cat. Snakes, 41; D. & B., 1854, Erp., VII, 1335; Cope, 1859, Pr. Phil. Ac., 347, — 1875, Jour. Phil. Ac., 95, 148; Jan, 1859, Rev. & Mag. Zoöl., Extr., p. 24; Fischer, 1856, Abhandl. Naturw. Hamb., 61; Gthr., 1864, Rept. Brit. India, 382; Trosch., 1865, Mueller's Wirbelth. Mex., 78. *Hydrophis bicolor* Mart., 1856, Mus. Berl., 32; Jan, 1863, Sist., 109, — 1872, Icon., livr. 40, pl. 2, f. 3–4, pl. 3, f. 2. *H. pelamis* Schleg., 1837, Essai, I, 187, II, 508, pl. 18, f. 13–15. *H. variegata* Schleg., 1838, Fauna Jap. Rept., tab. 8. *Pelamis ornata* Gray, 1849, Cat. Snakes, 43.

Seba, 1735, Thesaur., II, pl. 77, f. 2; Vosmaer, 1774, Nat. Hist. Platstaart Slang uit Mexico; Russell, 1796, Ind. Serp., I, 47, pl. 41, — 1801, vol. II, pl. 12.

West coast of Mexico and Central America to the East Indies and China.

SOLENOGLYPHA 110

BOTHROPHERA 110

CROTALIDAE. 110

Crotalini Oppel, 1811, Sur la Class. Rept., Mem. I, 44, — Ann. Mus., 387. *Crotaloidea* Fitz., 1826, Neue Class., 62. *Crotalidae* Gray, 1842, Zoöl. Misc., 47, — 1849, Cat. Serp., 3.

CROTALUS 110

Crotalus Linn., 1754, Mus. Ad. Fridr., 39. *Crotalus* Linn., 1758, Syst., I, 214, — 1766, Syst., I, 372 (incl. *C. miliarius*); Latr., 1801, Rept., III, 166; Daud., 1803, Rept., V, 297; Cuv., 1817, Regn. An., II, 77, — 1836, R. An., I, 412; Merr., 1820, Amph., 156; Fitz., 1826, Neue Class., 34, 63; Wagl., 1830, Amph., 176; Gray, 1849, Cat. Serp., 19; B. & G., 1853, Serp., 1; D. & B., 1854, Erp., VII, 1453; Cope, 1859, Pr. Phil. Ac., 336. *Crotalophorus* Linn., 1749, Amoen. Acad., I, pp. 297, 500, — 1756, Syst. Nat., Ed. 9, p. 35; Gronow, 1756, Hist. Amph., Gen., 45, — 1763, Zoophylac., p. 26, sp. 137–138. *Caudisona* Linn., 1735, Syst. Nat., Ed. 1; Laurent, 1768, Syn. Rept., 92; Cope, 1861, Mitch. Res., 119. *Crotalinus* Raf., 1818, Am. Month. Mag., III, 446, IV, 41. *Uropsophus* Wagler, 1830, Amph., 176; Gray, 1849, Cat. Serp., 18; Fitz., 1843, Syst., 29. *Urocrotalon* Fitz., 1843, Syst., 29.

CROTALUS DURISSUS 111

Crotalus durissus Linn., 1758, Syst., I, 214, — 1766, Syst., I, 372; Gmel., 1788, Syst. Linn., I, 1081; Bonn., 1790, Ophiol., 2, pl. 3, f. 4; Cuv., 1817, R. An., II, 78, — 1836, R. An., I, 413; Merr., 1820, Syst., 156; Boie, 1827, Isis, 562; Griffith, 1831, Cuv. An. King., IX, 267; LeC., 1853, Pr. Phil. Ac., 416; Cope, 1859, Pr. Phil. Ac., 337; Yarrow, 1875, Wheeler's Rep., V, 532; Sumichr., 1881, Bull. Soc. Zoöl. de France, 185. *Caudisona durissa* Cope, 1861, Pr. Phil. Ac., 292, — 1861,

SOLENOGLYPHA—Continued.

Mitch. Res., 120, — 1866, Pr. Phil. Ac., 308. *Crotalus horridus* Latr., 1801, Rept., III 186; Daud., 1803, Rept., V, 311; Max., 1824, Beitr. Bras., I, 435, — 1827, Abbild. Bras., lief. 11, pl. 4; Fitz., 1826, Neue Class., 63; Wagl., 1830, Amph., 176; Schleg., 1837, Essai, II, 561, pl. 20, f. 12–14; Gray, 1849, Cat., 20 (mixed); D. & B., 1854, Erp., VII, 1472, pl. 84 bis, f. 2; Mart., 1856, Mus. Berl., 34; Jan, 1859, Rev. & Mag. Zoöl., Extr., p. 28, — 1863, Sist., 124, — 1874, Icon., livr. 46, pl. 3, f. 1–2. *Caudisona terrifica* Laur., 1768, Syn. Rept., 93; Cope, 1861, Mitch. Res., 120, — 1866, Pr. Phil. Ac., 308. *Crotalus terrificus* Yarrow, 1875, Wheeler's Rep., V, 532. *Crotalus cascavella* Wagl., 1824, Spix. Bras. Serp., 60, pl. 24, — 1830, Syst., 176. *Crotalus simus* Latr., 1801, Rept., III, 202; Daud., 1803, Rept., V, 321. *Crotalus loeflingii* Humb., 1833, Recueil d'Obs. Zoöl., p. 6; Cope, 1861, Mitch. Res., 120. *Le Boiquira*, p. 390, and *Le durissus*, p. 423, LaC., 1739, Serp., II, text only.

Brazil to Mexico.

Var. MOLOSSUS 113

Crotalus molossus B. & G., 1853, Serp., 10; D. & B., 1854, Erp., VII, 1482; Bd., 1859, Mex. Bound., II, Rept., 14, pl. 3, — 1859, P. R. R. Rep., X, Rept., pl. 24, f. 5; Cope, 1859, Pr. Phil. Ac., 338, — 1875, Checklist, 33; Yarrow, 1875, Wheeler's Rep., pp. 531, 533; Coues, 1875, Wheeler's Rep., V, 605. *Caudisona molossus* Cope, 1861, Mitch. Res., 124, — 1866, Pr. Phil. Ac., 308. *Crotalus ornatus* Hall., 1854, Pr. Phil. Ac., 192, — 1859, P. R. R. Rep. (Parke's), X, pl. 2, pl. 24, f. 5, — Cope, 1859, Pr. Phil. Ac., 338.

Northern Mexico; Arizona; New Mexico.

Var. BASILISCUS. . . . .

Caudisona basilisca Cope, 1864, Pr. Phil. Ac., 166, — 1866, Pr. Phil. Ac., 308. *Crotalus basiliscus* Yarrow, 1875, Wheeler's Rep., V, 532.

Muzzle plates two pairs, a third pair subdivided. Rostral higher than wide, in contact with nasals and internasals. Labials 14, separated from suborbitals by two and three rows. Scales in 29 rows, outer largest, outer three smooth. Ventrals 199. Subcaudals 24. Pale yellowish-brown, head and tail darker. Markings on entire scales. Dorsal rhombs about thirty; five obscure rings on the tail. Two elongated occipital spots. No lines on the neck. Labials yellowish.

Western Mexico.

CROTALUS ADAMANTEUS (Diamond Rattlesnake) 112

Crotalus adamanteus Beauv., 1799, Trans. Am. Phil. Soc., IV, 368; Holbr., 1842, Herp., III, 17, pl. 2; DeK., 1842, N. Y. Fauna, Rept., 57; B. & G., 1853, Serp., 3; Bd., 1859, P. R. R. Rep., X, pl. 24, f. 2; LeC., 1853, Med. Jour., IX, 664; Jan, 1859, Rev. Mag. Zoöl., Extr., p. 28, — 1863, Sist., 123, — 1874, Icon., livr. 46, pl. 2, f. 2; Yarrow, 1875, Wheeler's Rep., V, 534; Cope, 1877, Pr. Am. Phil. Soc., 64. *Crotalus terrificus* Cope, 1859, Pr. Phil. Ac., 337; LeC., 1853, Pr. Phil. Ac., 419. *Caudisona adamantea* Cope, 1861, Mitch. Res., 121, — 1866,

SOLENOGLYPHA—Continued.

Pr. Phil. Ac., 309. *Crotalus adamanteus* subsp. *adamanteus* Cope, 1875, Checklist, 33. *C. rhombifer* Latr., 1801, Rept., III, 197; Daud., 1803, Rept., V, 323, pl. 60, f. 22, 23, pl. 69, f. 2; Merr., 1820, Syst., 157; D. & B., 1854, Erp., VII, 1470; Mart., 1856, Mus. Berl., 34; Duges, 1879, La Naturaleza, IV, 22. *C. durissus* Shaw, 1802, Zoöl., III, pt. 2, 333, pl. 89. *C. horridus* Latr., 1801, Rept., III, 199.

Texas to the Carolinas.

Var. SCUTULATUS 113

Caudisona scutulatus Kenn., 1861, Pr. Phil. Ac., 207; Cope, 1866, Pr. Phil. Ac., 307, 309. *Crotalus scutulatus* Yarr., 1875, Wheeler's Rep., V, 533. *Caudisona adamantea* subsp. *scutulata* Cope, 1875, Checklist, 33. *Caudisona adamantea scutulata* Coues, 1875, Wheeler's Rep., V, 607.

Arizona; Mexico.

Var. ATROX 113

Crotalus atrox B. & G., 1853, Serp., pp. 5, 156; D. & B., 1854, Erp., VII, 1482; Bd., 1859, Mex. Bound., II, 14, pl. 1, — 1859, P. R. R. Rep., X, Whipples, 39, pl. 24, f. 3; Cope, 1859, Pr. Phil. Ac., 337; Yarr., 1875, Wheeler's Rep., V, 534; Duges, 1879, La Naturaleza, IV, 26. *Caudisona atrox* Cope, 1861, Mitch. Res., 121, — 1866, Pr. Phil. Ac., 309. *Caudisona adamantea atrox* Coues, 1875, Wheeler's Rep., V, 607. *Crotalus adamanteus atrox* Cope, 1880, Bull. 20, U. S. Mus., 24. *Crotalus adamanteus* subsp. *atrox* Cope, 1875, Checklist, 33; Yarr., 1875, Wheeler's Rep., V, 529. *Crotalus adamanteus* Jan, 1874, Icon., livr. 46, pl. 2, f. 1. *C. adamanteus* var. *atrox* Jan, 1859, Rev. Mag. Zoöl., Extr., p. 28, — 1863, Sist., 123. *Caudisona atrox* var. *sonoriensis* Kenn., 1861, Pr. Phil. Ac., 206. *Caudisona atrox sonoriensis* Cope, 1861, Pr. Phil. Ac., 292. *Crotalus adamanteus* var. *sonoriensis* Jan, 1863, Sist., 124.

Texas to Mexico.

CROTALUS CONFLUENTUS 114

Crotalus confluentus Say, 1823, Long's Exp., II, 48; B. & G., 1853, Serp., 8, — 1854, Marcy's Exp., 188, pl. 1; D. & B., 1854, Erp., VII, 1475; Bd., 1859, Mex. Bound., II, Rept., 14, — 1859, P. R. R. Rept., X, Whipples, 40, pl. 24, f. 4; Cooper, 1860, P. R. R. Rep., XII, pt. 2, 295; Hall., 1856, Pr. Phil. Ac., 250; Cope, 1859, Pr. Phil. Ac., 337; Yarrow, 1875, Wheeler's Rep., V, 530, 533; Cope, 1875, Checklist, 33, — 1880, Bull. 20, U. S. Mus., 24; Coues & Yarrow, 1878, Hayd. Rep., IV, 263. *Caudisona confluenta* Cope, 1861, Mitch. Res., 122, — 1866, Pr. Phil. Ac., 307, 309; Allen, 1874, Pr. Bost. Soc., 309; Coues, 1875, Wheeler's Rep., V, 604. *Crotalus lecontei* Hall., 1851, Pr. Phil. Ac., 180, — 1859, P. R. R. Rep., X, Williamson's, 18, — 1853, Sitgreave's Exp., 139. *Caudisona lecontei* Cope, 1861, Mitch. Res., 121; Hayd., 1862, Trans. Am. Phil. Soc., 177. *Caudisona confluenta* var. *lecontei* Cope, 1866, Pr. Phil. Ac., 307. *Crotalus adamanteus* var. *confluentus* Jan, 1859, Rev. Mag. Zoöl., Extr., p. 28, — 1863; Sist., 124.

Dakota to Texas.

SOLENOGLYPHA—Continued.

Var. PYRRHUS . . . .

Caudisona pyrrha Cope, 1866, Pr. Phil. Ac., 308, 310; Coues, 1875, Wheeler's Rep., V, 608. *Crotalus pyrrhus* Cope, 1875, Checklist, 33; Yarrow, 1875, Wheeler's Rep., V, 535. A doubtful variety.

Arizona.

CROTALUS OREGONUS . . . .

Crotalus oregonus Holbr., 1842, Herp., III, 21, pl. 3; DeK., 1842, N. Y. Fauna, Rept., 57; B. & G., 1853, Serp., 145; Bd., P. R. R. Rep., X, pl. X, 24, f. 6; D. & B., 1854, Erp., VII, 1482; Cope, 1859, Pr. Phil. Ac., 337. *Crotalus lucifer* B. & G., 1852, Pr. Phil. Ac., 177, — 1853, Serp., 6 (part); D. & B., 1854, Erp., VII, 1482; Grd., 1858, Herp., Wilkes' Exp., 187, pl. 15, f. 1–6; Bd., 1859, P. R. R. Rep., X, Williamson, 10, pl. 11, pl. 36, f. 1; Cooper, 1860, P. R. R. Rep., XII, pt. 2, 295. *Caudisona lucifer* Cope, 1861, Mitch. Res., 121, — 1866, Pr. Phil. Ac., 307, 309.

Internasals and prefrontals small irregular. Labials 15 to 16, two to three rows of scales between them and the orbit. Scales in 25 (25 to 27) rows. Ventrals 168 to 177. Subcaudals 22 to 25. Light brown, tinged with yellow or ash, darker posteriorly. Irregular rhomboid dark-bordered areas of the ground color or darker form a vertebral series. Posteriorly the spots become transverse bands. Outside of the dark borders there are more or less indistinct lines of light color which cross on the flank inclosing a similar small spot on the lower part of the side opposite each of the dorsal series. Of spots and bands there are about forty to the series. A light line crosses the frontals, and passes through the supraciliary to the posterior labial. Another line of light color passes in front of the eye, and includes the lower portions of the labials. The dark colors are darker and the light whiter than those of *confluentus*.

Oregon to California.

Var. LUCIFER 114

Crotalus lucifer B. & G., 1852, Pr. Phil. Ac., 177, and 1853, Serp., 6, part; Cope, 1859, Pr. Phil. Ac., 337, — 1875, Checklist, 33; Yarr., 1875, Wheeler's Rep., V, 533. *Caudisona lucifer* Coues, 1875, Wheeler's Rep., V, 606. *Crotalus adamanteus* var. *lucifer* Jan, 1863, Sist., 124. *Crotalus horridus* Gthr., 1858, Cat., 267, ? part.

California to Mexico.

Var. CERBERUS . . . .

Caudisona lucifer var. *cerberus* Coues, 1875, Wheeler's Rep., V, 607. "Nearly black, especially on the head."

Arizona.

Var. MITCHELLII . . . .

Caudisona mitchellii Cope, 1861, Pr. Phil. Ac., 293, 1866, Pr. Phil. Ac., 310. *Crotalus mitchellii* Yarr., 1875, Wheeler's Rep., V, 535; Cope, 1875, Checklist, 33.

Crown scales small, rough. One loreal. Anterior portion of nasal small, higher than long, separated from rostral and labials by small

SOLENOGLYPHA—Continued.

scales. Labials 16, the last large, three rows between them and the orbit. Scales in 25 rows, keels of outer row weaker. Ventrals 198. Subcaudals 26. Greyish-yellow, punctulate with brown. Dorsal spots about 42, lateral angles produced down the flank. Five black cross bands on the tail. A yellow band from the nasals to the upper borders of the hinder labials. Above this a brown band from the eye.

Lower California.

Var. ENYO . . . .

Caudisona enyo Cope, 1861, Pr. Phil. Ac., 293, — 1866, Pr. Phil. Ac., 309. *Crotalus enyo* Yarr., 1875, Wheeler's Rep., V, 534; Cope, 1875, Checklist, 33.

Internasals and frontals small, scale-like. Rostral low, equilateral. Nasal in contact with rostral. Numerous small scales in front of the pit. Labials 13 or 14, separated from orbit by three scales. Infralabials 14 or 15. Scales in 23 rows, keels in outer two or three obsolete. Ventrals 166. Subcaudals 26. Light greyish-brown, shaded with yellow. A pair of small brown spots on vertex. A light band bordered with dark across the supraciliaries. A band from the eye over the last labial to the neck. A series of about thirty-three vertebral spots, longer anteriorly, broader posteriorly, and fusing with the lateral spots, forming vertical bands on the flanks. Belly yellow, mottled with darker. Resembles *C. molossus* in coloration.

Lower California.

CROTALUS EXSUL sp. n. 114

Cedros Island.

CROTALUS HORRIDUS "Banded Rattlesnake" 115

Crotalus horridus Linn., 1758, Syst., I, 214, — 1766, Syst., I, 372; Bonn., 1790, Ophiol., 1, pl. 2, f. 3; Shaw, 1802, Zoöl., III, 317, pl. 88; Cuv., 1817, R. An., II, 78, — 1836, R. An., I, 413; Guerin, 1829–38, Icon. R. An., Rept., 15, pl. 23, f. 2; Griffith, 1831, An. King., IX, 267; Gray, 1831, Syn. Rept., 78, mixed; LeC., 1853, Pr. Phil. Ac., 417; Cope, 1859, Pr. Phil. Ac., 338, — 1875, Checklist, 33; Yarr., 1875, Wheeler's Rep., V, 534. *Caudisona horrida* Cope, 1861, Mitch. Res., 122, — 1866, Pr. Phil. Ac., 309. *Caudisona durissa* Laur., 1768, Syn. Rept., 93. *Crotalus durissus* Gmel., 1788, Syst. Linn., I, 1081, after Laur., mixed; Latr., 1801, Rept., III, 190; Daud., 1803, Rept., V, 304, pl. 68, f. 12; Harl., 1827, Jour. Phil. Ac., 368, — 1835, Med. Res., 132; Schleg., 1837, Essai, I, 192, II, 365, pl. 20, f. 15, 16; Storer, 1839, Rept. Mass., 233; Holbr., 1842, Herp., III, 9, pl. 1; DeK., 1842, N. Y. Fauna, III, Rept., 55, pl. 9, f. 19; B. & G., 1853, Serp., 1; LeC., 1853, Med. Jour., 663; Bd., 1854, N. Y. Serp., 9, — 1859, P. R. R. Rep., X, Whipple, 39, pl. 24, f. 1; D. & B., 1854, Erp., VII, 1465; Mart., 1856, Mus. Berl., 34; Jan, 1859, Rev. Mag. Zoöl., Extr., p. 28, — 1863, Sist., 123, — 1874, Icon., livr. 46, pl. 1, f. 1, 2; Allen, 1869, Pr. Bost. Soc., 179. *Crotalinus Cyanurus* Raf., 1818, Am. Month. Mag., III, 446, IV, 41. *Urocrotalon durissus* Fitz., 1843, Syst., 29. *Urop-*

SOLENOGLYPHA—Continued.

sophus durissus Gray, 1849, Cat., 19. *Crotalus atricaudatus* Latr., 1801, Rept., III 209; Daud., 1803, Rept., V, 316; Merr., 1820, Syst., 157, Boie, 1827, Isis, 562; Wagl., 1830, Amph., 177; Gray, 1842, Zoöl. Misc., 51. ? *C. durissus* var. *concolor* Jan, 1859, Rev. Mag. Zoöl., Extr., p. 28. *C. durissus* var. *melanurus* Jan, 1859, Rev. Mag., Extr., p. 28, — 1863, Sist., 123. *Le durissus* LaC., 1789, Serp., pl. 18, f. 3, not text. *Le Boiquira* LaC., 1789, pl. 18, f. 1, not text. *Vipera caudisona* Catesby, 1743, Carol., II, 41.

Texas to New England.

CROTALUS CERASTES 116

Crotalus cerastes Hall., 1854, Pr. Phil. Ac., 95, — 1859, P. R. R. Rep., X, Williamson, 17, pl. IV, f. 1, pl. 35, f. 4, 5; (Kenn.) Bd., 1859, Mex. Bound., II, 14, pl. 3; Cope, 1829, Pr. Phil. Ac., 337, — 1875, Checklist, 33; Jan, 1863, Sist., 124, — 1874, Icon., livr. 46, pl. 3, f. 5; Yarr., 1875, Wheeler's Rep., V, 534. *Caudisona cerastes* Cope, 1861, Mitch. Res., 124, — 1866, Pr. Phil. Ac., 309. *Caudisona* (*Aechmophrys*) *cerastes* Coues, 1875, Wheeler's Rep., V, 609. *Aechmophrys cerastes* Coues, 1875, Wheeler's Rep., V, 609.

California; Arizona; Mexico.

? CROTALUS LEPIDUS 117

Caudisona lepida Kenn., 1861, Pr. Phil. Ac., 206; Cope, 1861, Mitch. Res., 124. *Aploaspis lepida* Cope, 1866, Pr. Phil. Ac., 310, — 1875, Checklist, 33; Yarr., 1875, Wheeler's Rep., V, 535.

Western Texas.

CROTALUS TIGRIS 117

Crotalus tigris (Kenn.) Bd., 1859, Mex. Bound , II, Rept., 14, pl. 4, — 1859, P. R. R. Rep., X, pl. 35, f. 1; Cope, 1859, Pr. Phil. Ac., 338, — 1875, Checklist, 33; Yarr., 1875, Wheeler's Rep., V, 534. *Caudisona tigris* Cope, 1861, Mitch. Res., 122, — 1866, Pr. Phil. Ac., 309; Coues, 1875, Wheeler's Rep., V, 608.

Mexico.

CROTALUS TRISERIATUS 112, 117

Crotalus triseriatus Wiegm., 1828, Mus. Berl.; Mart., 1856, Mus. Berl., 34; Cope, 1864, Pr. Phil. Ac., 166; Yarr., 1875, Wheeler's Rep., V, 533. *Uropsophus triseriatus* Wagl., 1830, Amph., 176; Gray, 1842, Zoöl. Misc., 51. *Caudisona triseriata* Cope, 1866, Pr. Phil. Ac., 308. *Crotalus lugubris* Jan, 1859, Rev. Mag. Zoöl., Extr., pp. 28, 31, pl. E, f. 4, — 1863, Sist., 124; Cope, 1859, Pr. Phil. Ac., 338, — 1864, Pr. Phil. Ac., 166; Duges, 1879, La Naturaleza, IV, 25. *Caudisona lugubris* Cope, 1861, Mitch. Res., 122. *Crotalus lugubris* var. *multimaculata* Jan, 1863, Sist., 124, — 1874, Icon., livr. 46, pl. 3, f. 3. *Caudisona polysticta* Cope, 1865, Pr. Phil., Ac., 191, — 1866, Pr. Phil. Ac., 308. *Crotalus polystictus* Yarr., 1875, Wheeler's Rep., V, 533. *Crotalus* (*Crotalophorus*) *miliarius* var. *triseriatus* Jan, 1859, Rev. Mag. Zoöl., Extr., p. 29.

Mexico.

SOLENOGLYPHA—Continued.

Var. JIMENEZII . . . .

Crotalus jimenezii Duges, 1879, La Naturaleza, IV, 23.

Internasals four. Prefrontals four. Labials 14 to 15, separated from the orbit by two or three series. Scales in 25 rows, outer three smooth. Brownish-yellow, tinted with flesh color below, with five series of brown white-margined spots, of which the vertebral are larger. On each side of the occiput and neck a brown band. A brown band from the eye above the angle of the mouth to the neck; above this another from the supraciliary. A vertical band from the eye to the labials; a similar one from the pit to the mouth. Mexico.

SISTRURUS 110, 118

Caudisona Fitz., 1826, Neue Class., 63 (not of Laurent); Wagl., 1830, Amph., 176; Bonap., 1832, Saggio, 24; Gray, 1842, Zoöl. Misc., 51; Fitz., 1843, Syst. Rept., 29; Cope, 1875, Checklist, 33. *Crotalophorus* Gray, 1825, Ann. Phil., 205 (not of Linné); Holbr., 1842, Herp., III, 25; Gray, 1849, Cat. Serp., 17; B. & G., 1853, Serp., 11; Cope, 1859, Pr. Phil. Ac., 336. *Crotalus* Cope, 1861, Mitch. Res., App., 119 (not of Linné).

SISTRURUS CATENATUS 118

Crotalinus catenatus Raf., 1818, Am. Month. Mag., IV, 41. *Crotalus tergeminus* Say, 1823, Long's Exp., I, 499; Boie, 1824, Isis, 270 (Cope), — 1827, Isis, 563; Harl., 1827, Jour. Phil. Ac., 372, — 1835, Med. Res., 135; D. & B., 1854, Erp., VII, 1479, pl. 84 bis, f. 5; Cope, 1861, Mitch. Res., 125; Hayd., 1862, Trans. Am. Phil. Soc., 177. *Crotalophorus tergeminus* Gray, 1831, Syn. Rept., 78, — 1849, Cat. Serp., 18; Holbr., 1842, Herp., III, 29, pl. V; DeK., 1842, N. Y. Rept., 57; B. & G., 1853, Serp., 14; Bd., 1854, Serp. N. Y., 11, — 1859, P. R. R. Rep., X, 14, pl. 25, f. 9; Cope, 1859, Pr. Phil. Ac., 336. *Caudisona tergemina* Wagl., 1830, Syst. Amph., 176; Cope, 1875, Checklist, 34; Coues and Yarrow, 1878, Hayd. Rep., IV, 269. *Crotalophorus kirtlandi* Holbr., 1842, Herp., III, 31, pl. 6; DeK., 1842, N. Y. Rept., 57; Gray, 1849, Cat. Serp., 18; B. & G., 1853, Serp., 16; D. & B., 1854, Erp., VII, 1482; Bd., 1854, Serp. N. Y., 12 (*C. massassauga* Kirtland), — 1859, P. R. R. Rep., X, 14, pl. 25, f. 11; Cope, 1859, Pr. Phil. Ac., 336. *Crotalophorus* sp. Agassiz, 1850, Lake Superior, 381, pl. 6, f. 6–8.

Ohio and Michigan to the Plains and southward to Mississippi.

Var. CONSORS . . . .

Crotalophorus consors B. & G., 1853, Serp., 12; D. & B., 1854, Erp., VII, 1482; Bd., 1859, P. R. R. Rep., pl. 24, f. 8.

Frontal cordiform. Prefrontals moderate. Parietals rather broad. Scales in 25 rows, outer two smooth. Ventrals 147; subcaudals 25. No vertebral red line. Olivaceous brown, with seven series of about fifty spots each, all small. Blotches darker, with a narrow border of darker, surrounded by a light margin. Two lines from the vertex along the neck to the first blotch. A band from the eye to the neck. A whitish line from the nostril to the angle of the mouth. A vertical band on each side of the pit. Belly yellowish-white, blotched with darker. Texas.

SOLENOGLYPHA—Continued.

SISTRURUS MILIARIUS 119

Crotalus miliarius Linn., 1766, Syst., I, 372; Gmel., 1788, Syst. Linn., I, 1080; Bonn., 1790, Ophiol., 1; Latr., 1801, Rept., III, 203; Shaw, 1802, Zoöl., III, 336; Daud., 1803, Rept., V, 328; Cuv., 1817, R. An., II, 79; Merr., 1820, Syst., 156; Boie, 1827, Isis, 562; Harl., 1827, Jour. Phil. Ac., 370, — 1835, Med. Res., 134; Schleg., 1837, Essai, I, 192, II, 569, pl. 20, f. 17, 18; Holbr., 1838, Herp., II, pl. 15; D. & B., 1854, Erp., VII, 1477; Cope, 1861, Mitch. Res., 124; Jan, 1859, Rev. Mag. Zoöl., Extr., p. 28, — 1863, Sist., 124. *Crotalophorus miliarius* Gray, 1825, Ann. Phil., 205, — 1831, Syn. Rept., 78; Holbr., 1842, Herp., III, 25, pl. 4; DeK., 1842, N. Y. Rept., 57; Gray, 1849, Cat. Snakes, 17; B. & G., 1853, Serp., 11; Gthr., 1858, Cat., 267; Bd., 1859, P. R. R. Rep., X, Whipple, 40, pl. 24, f. 7; Cope, 1859, Pr. Phil. Ac., 336. *Caudisona miliaria* Fitz., 1826, Neue Class., 63, — 1843, Syst. Rept., 29; Wagl., 1830, Amph., 176; Gray, 1842, Zoöl. Misc., 51; Cope, 1875, Checklist, 34, — Pr. Am. Phil. Soc., 64, — 1880, Bull. 20, U. S. Mus., 24. *Crotalus miliarius* var. *tergeminus* Jan, 1859, Rev. Mag. Zoöl., Extr., 28, — 1863, Sist., 124, — 1874 Icon., livr. 46, pl. 3, f. 4. ? *Crotalus tergeminus* Mart., 1856, Mus. Berl., 34. *Vipera caudisona minor* Catesby, 1743, Carol., II, 42. *Le Millet* LaC., 1789, Quad. Ovip. Serp., II, 421, pl. 18, f. 2.

Southern States.

Var. EDWARDSII . . . .

Crotalophorus edwardsii B. & G., 1853, Serp., 15; D. & B., 1854, Erp., VII, 1485; Bd., 1858, Mex. Bound., II, Rept., 15, — 1859, P. R. R. Rep., X, pl. 25, f. 10; Duges, 1879, La Naturaleza, IV, 27. *Crotalus edwardsii* Cope, 1861, Mitch. Res., 125; Coues, 1875, Wheeler's Rep., V, 610. *Caudisona edwardsii* Cope, 1875, Checklist, 34; Yarrow, 1875, Wheeler's Rep., V, 531. ? *Crotalus miliarius* var. *edwardsii* Jan, 1863, Sist., 124. *Crotalus miliarius* Jan, 1874, Icon., livr. 46, pl. 3, f. 6.

Scales in 23 rows, outer two smooth. Ventrals 143 to 153. Subcaudals 23. Yellowish-brown, with seven (five to seven) series of spots. A band of brown from prefrontal over eye to neck; beneath this a yellowish stripe from nostril to neck. Yellowish bars downward from each side of the pit. About forty-two black-bordered light-margined blotches in the vertebral series. Belly light yellowish, mottled with brown.

Texas; Arizona; Sonora; Mexico.

Var. RAVUS 120

Crotalus ravus Cope, 1865, Pr. Phil. Ac., 191. *Caudisona rava* Cope, 1875, Checklist, 33.

Mexican Plateau.

ANCISTRODON 120

Agkistrodon Pal. de Beauv., 1799, Trans. Am. Phil. Soc., IV, 381; B. & G., 1853, Serp., 17. *Cenchris* Daud., 1803, Rept., VIII, 388. *Tisiphone* Fitz., 1826, Neue Class., 63. *Toxicophis* Troost., 1833, Ann. Lyc. N. Y., III, 176.

SOLENOGLYPHA—Continued.

Ancistrodon contortrix (Copperhead) 120

B. & G., 1853, Serp., 17; Bd., 1854, Serp. N. Y., 13, — 1859, P. R. R. Rep., X, pl. 25, f. 12; Cope, 1859, Pr. Phil. Ac., 336, — 1875, Checklist, 34. — 1880, Bull. 20, U. S. Mus., 24; Allen, 1869, Pr. Bost. Soc., 11. *Coluber contortrix* Linn., 1758, Syst., I, 216. *Boa contortrix* Linn., 1766, Syst., I, 373; Gmel., 1788, Syst. Linn., I, 1083. *Trigonocephalus contortrix* Holbr., 1842, Herp., III, 39, pl. 8; D. & B., 1854, Erp., VII, 1494; Mart., 1856, Mus. Berl., 35; Hall., 1856, Pr. Phil. Ac., 249; Jan, 1859, Rev. Mag. Zoöl., Extr., p. 29, — 1863, Sist., 125, — 1874, Icon., livr. 46, pl. 5, f. 1. *Trigonocephalus histrionicus* Dum., 1852, Mem. Acad. Sci., XXIII, 534. *T. cenchris* Schleg., 1837, Essai, I, 191, II, 553, pl. 20, f. 10, 11. *Cenchris contortrix* Gray, 1825, Ann. Phil., — 1849, Cat. 16. *C. mockeson* Daud., 1803, Rept., V, 358, pl. 60, f. 25, pl. 70, f. 3, 4; Harl., 1827, Jour. Phil. Ac., 366, — 1835, Med. Res., 128; Wagl., 1830, Syst. Amph., 175. *Agkistrodon mokason* Beauv., 1799, Trans. Am. Phil. Soc., IV, 380. *Scytalus cupreus* Raf., 1834, Am. Jour. Sci., I, 85. Mississippi Valley to the Atlantic.

Var. atrofuscus ("Highland Moccasin"). . . . .

Acontias atrofuscus Troost, 1836, Ann. N. Y. Lyc., 181. *Toxicophis atrofuscus* Troost, 1836, Ann. N. Y. Lyc., 190; B. & G., 1853, Serp., 150. *Cenchris atrofuscus* Gray, 1849, Cat., 16. *Trigonocephalus atrofuscus* Holbr., 1842, Herp., III, 43, pl. 9; D. & B., 1854, Erp., VII, 1495. *Ancistrodon atrofuscus* Cope, 1875, Checklist 34.

"The colour of the upper parts of the body must be considered as black, variegated with brown spots, which are not of a uniform shade, but pass from dark into a lighter colour; they are irregularly scattered over the body; nevertheless, they exhibit a tendency to run from one side toward the other, widening towards the back. The light spots are composed of smoky gray, passing into blackish brown, exhibiting all the intermediate shades between these two colours; they are rather small stripes of the breadth of from two to four scales, and disappear near the tail altogether, which is entirely black, having only four small white points, which are probably accidental." Top of head black, whitish behind the eye. A band from the eye above posterior labial. Belly whitish, blotched with black.

Mountain region from Virginia southward.

Ancistrodon piscivorus (Moccasin) 121

Crotalus piscivorus LaC., 1789, Quad. Ovip. Serp., II, pp. 130, 424. *Trigonocephalus piscivorus* Holbr., 1838, Herp., II, 63, pl. 13, — 1842, Herp., III, 33, pl. 7; D. & B., 1854, Erp., VII, 1491; Mart., 1856, Mus. Berl., 35; Jan, 1859, Rev. Mag. Zoöl., Extr., p. 29, — 1863, Sist., 125, — 1874, Icon., livr. 46, pl. 4, f. 2–4. *Cenchris piscivorus* Gray, 1849, Cat. Snakes, 16; Gthr., 1858, Cat., 267. *Toxicophis piscivorus* B. & G., 1853, Serp., 19; Bd., 1859, P. R. R. Rep., X, Whipple's, 40, pl. 25, f. 13. *Ancistrodon piscivorus* Cope, 1859, Pr. Phil. Ac., 336, — 1877, Pr. Am. Phil. Soc., 64, — 1880, Bull. 20, U. S. Mus., 24. *Ancistrodon piscivorus* subsp. *piscivorus* Cope, 1875, Checklist, 34. *Acontias leucostomus* Troost, 1833, Ann. N. Y. Lyc., III, 176. South Carolina to Texas.

SOLENOGLYPHA—Continued.

Var. PUGNAX . . . .

Toxicophis pugnax B. & G., 1853, Serp., pp. 20, 156; Bd., 1859, P. R. R Rep., X, pl. 25, f. 14. *Toxicophis piscivorus* subsp. *pugnax* Cope, 1875, Checklist, 34. *Trigonocephalus piscivorus* var. *pugnax* Jan, 1863, Sist., 125.

No loreal. Second labial with a narrow edge or acute angle at the mouth. Third and fourth labials in orbit. Light olive-brown above; yellowish, with brownish blotches on each side, beneath. Tail black. About thirty blotches of darker on the back. Margins irregular, often indistinct. Cheek band obsolete. Ventrals 145. Subcaudals 22, plus 23 pairs. Scales in 25 rows.

Texas.

ANCISTRODON BILINEATUS . . . .

Guenther, 1863, Ann. Mag. Nat. Hist., 364; Cope, 1865, Pr. Phil. Ac., 191; Sumichrast, 1881, Bull. Soc. Zoöl. de France, 185.

"Shining deep black, with scattered white spots, arranged in narrow, distant, transverse bands; the white spots are more numerous and irregular on the belly; a yellow line runs from the rostral along the canthus rostralis and the supraciliary edge to behind the angle of the mouth. A yellow band along the upper labials, the lower margin of which is black. Rostral, with a vertical yellow band, continued on the chin. Upper labials eight. Scales keeled, in 23 series. Ventrals 137; subcaudals 65, the fourteen last double."

Western Mexico; Isthmus of Tehuantepec.

LACHESIS 122

Daudin, 1803, Rept., V, 351; Wagl., 1830, Syst., 175; D. & B., 1854, Erp., VII, 1483; Gray, 1849, Cat., 13. *Craspedocephalus* Gray, 1825, Ann. Phil., 205.

LACHESIS MUTUS 122

Crotalus mutus Linn., 1766, Syst., I, 373; Gmel., 1788, Syst. Linn., I, 1082; Schleg., 1837, Essai, II, 570, pl. 20, f. 19, 20; Jan, 1859, Rev. Mag. Zoöl., Extr., p, 29. *Lachesis mutus* Daud., 1803, Rept., V, 351; Wagl., 1830, Syst., 175; Gray, 1842, Zoöl. Misc., 50, — 1849, Cat., 13; D. & B., 1854, Erp., VII, 1485; Mart., 1856, Mus. Berl., 35; Cope, 1859, Pr. Phil. Ac., 339; Jan, 1863, Sist., 124. *Lachesis rhombeatus* Max., 1824, Abbild. Bras. lief. 5, pl. 5; Fitz., 1826, Neue Class., 63, — 1843, Syst., 29; Gray, 1831, Syn. Rept., 79. *Craspedocephalus crotalinus* Gray, 1825, Ann. Phil., 205. *Cophias crotalina* Merr., 1820, Syst., 154. *Bothrops surucucu* Wagl., 1824, Spix. Serp. Bras., p. 59, pl. 23? *Boa muta* LaC., 1789, Quad. Ovip. Serp., II, 389. *Boa crotalina* Shaw, 1802, Zoöl., III, 352. *Scytale catenatus* Latr., 1801, Rept., III, 162. *Trigonocephalus rhombifer* Cuv., 1829, R. An. II, 90.

Brazil to Mexico.

Var. STENOPHRYS 123

Lachesis stenophrys Cope, 1875, Jour. Phil. Ac., 152.

Central America.

SOLENOGLYPHA—Continued.

TRIGONOCEPHALUS 123

Trigonocephalus Oppel, 1811, Class. Rept., 55. *Cophias*, Merrem, 1820, Syst., 154; Gray, 1831, Syn. Rept., 79. *Bothrops* Wagler, 1824, Spix. Serp. Bras., 50, — 1830, Syst. Amph., 174; D. & B., 1854, Erp., VII, 1502; Fitz., 1843, Syst. Rept., 29. *Craspedocephalus* Fitz., 1826, Class. Rept., 62; Gray, 1849, Cat., 4.

TRIGONOCEPHALUS ASPER 124

Possibly a variety of *T. lanceolatus*, which it resembles, but which is a West Indian species.

Isthmus.

TRIGONOCEPHALUS ATROX 124

Coluber atrox Linn., 1754, Mus. Ad. Fridr., pl. 22, f. 2; Gmel., 1788, Syst. Linn., I, 1107. *Cophias atrox* Merr., 1820, Syst., 154. *Vipera atrox* Laur., 1768, Syst., 103. *Bothrops atrox* Wagl., 1830, Syst. Amph., 174; D. & B., Erp., VII, 1507; Mart., 1856, Mus. Berl., 35. *Bothrops tessellatus* pl. 21, f. 2, *B. taeniatus* pl. 21, f. 3, and *B. leucurus* pl. 22, f. 2, Wagl. in Spix. Serp. Bras. *B. atrox* var. *tessellatus* Jan, 1875, Icon., livr. 47, pl. 2, f. 4. *Craspedocephalus atrox* Fitz., 1826, Neue Class., 66; Gray, 1849, Cat., 6. *Trigonocephalus atrox* Kuhl., 1820, Beitr., pp. 91, 100; Schleg., 1837, Essai, II, pl. 19, f. 5, 6.

Brazil to Mexico, through varieties.

TRIGONOCEPHALUS AFFINIS 125

Bothrops affinis Bocourt, 1863, Ann. Sci. Nat., pt. II, 201. *Bothriopsis affinis* Cope, 1875, Jour. Phil. Ac., 150.

Guatemala.

TELEURASPIS 126

Cope, 1860, Pr. Phil. Ac., 345.

TELEURASPIS UNDULATUS 126

Trigonocephalus undulatus Jan, 1859, Rev. Mag. Zoöl., Extr., p. 30. *T. (Atropos) undulatus* Jan, 1859, *l. c.* p. 32. *Atropos undulatus* Jan, 1859, *l. c.*, pl. E, f. 6, — 1863, Sist., 127.

Mexico.

TELEURASPIS NIGROADSPERSUS 126

Bothrops (Teleuraspis) nigroadspersus Steind., 1870, Sitzb. Ak. Wien, 348, pl. 8.

Central America to Mexico.

TELEURASPIS NUMMIFER 127

Atropos nummifer Ruepp., 1845, Mus. Senck., 313. *Teleuraspis nummifer* Gthr., 1863, Ann. Mag. Nat. Hist., 25. *Atropos mexicanus* D. & B., 1854, Erp., VII, 1521, pl. 83 bis, f. 1, 2. *Bothriechis mexicanus* Cope, 1861, Pr. Phil. Ac., 294. ? *Trigonocephalus nummifer* Jan, 1859, Rev. Mag. Zoöl., Extr., 30. ? *Bothrops nummifer* Jan, 1863, Sist., 126, — 1875, Icon., livr. 47, pl. 5, f. 2.

Mexico.

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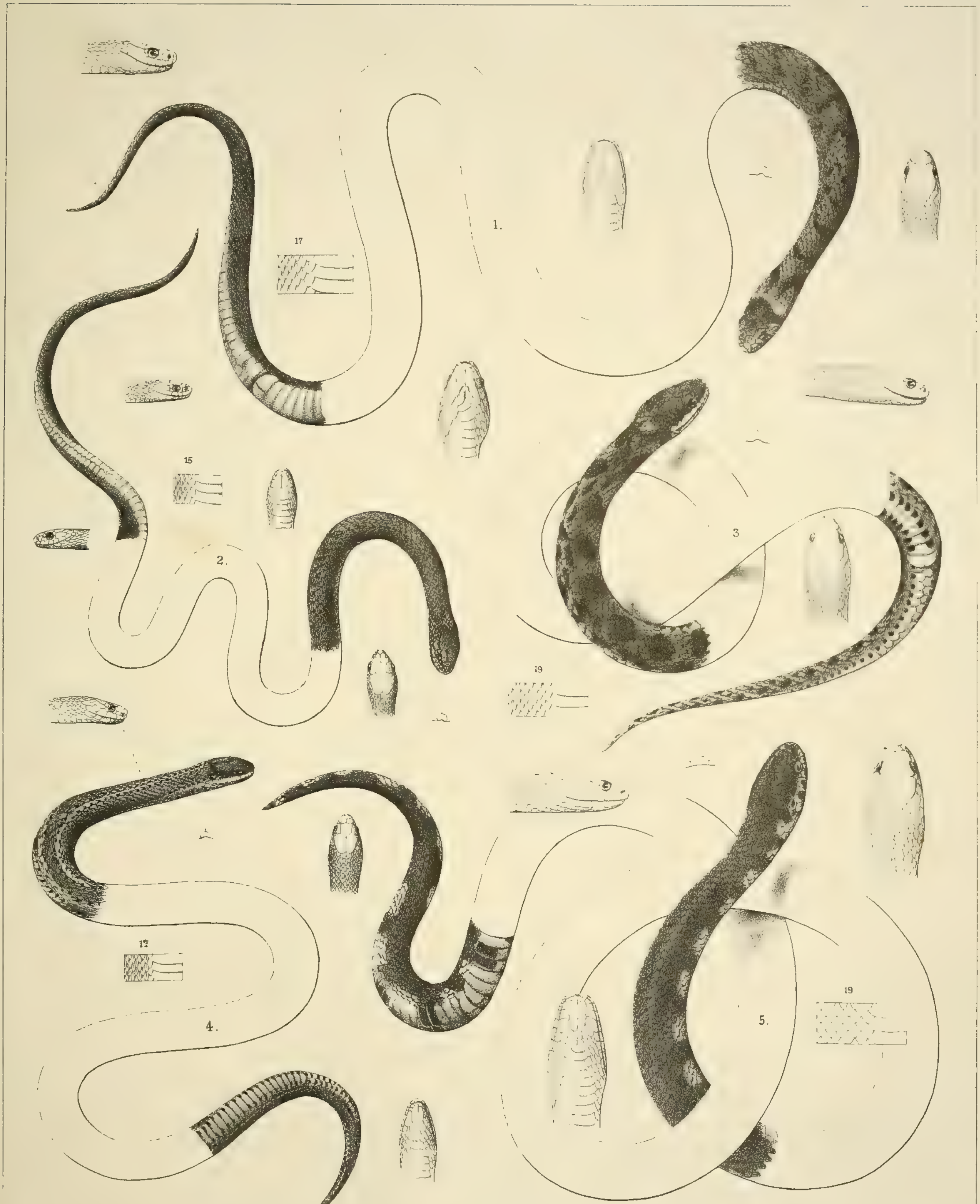
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L. Trouvelot del.

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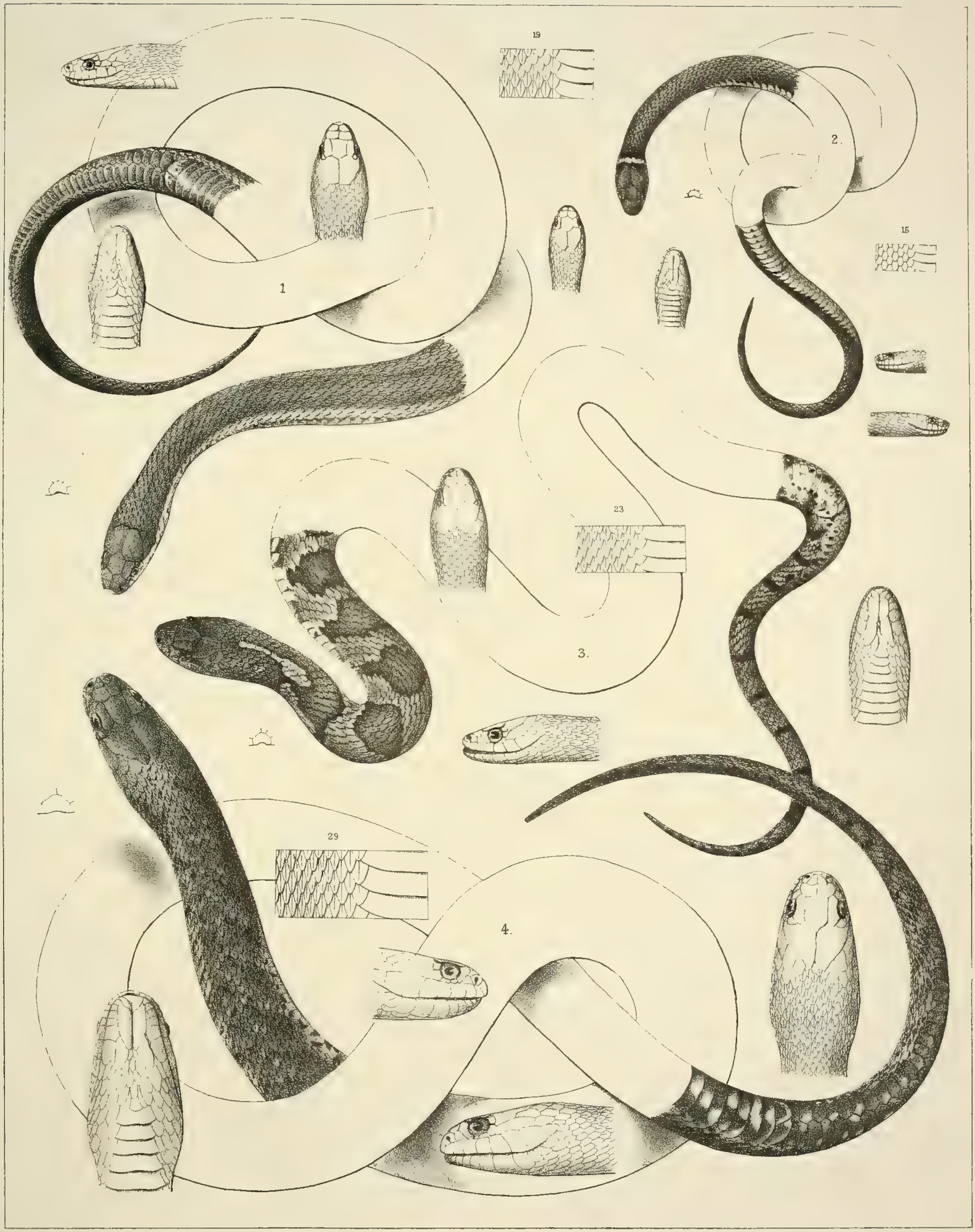
1. Storeria dekayi. 2. S. occipitomaculata. 3. Regina kirtlandi.

4. Storeria lineata. 5. Hydrops abacurus.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L. Trouvelot del.

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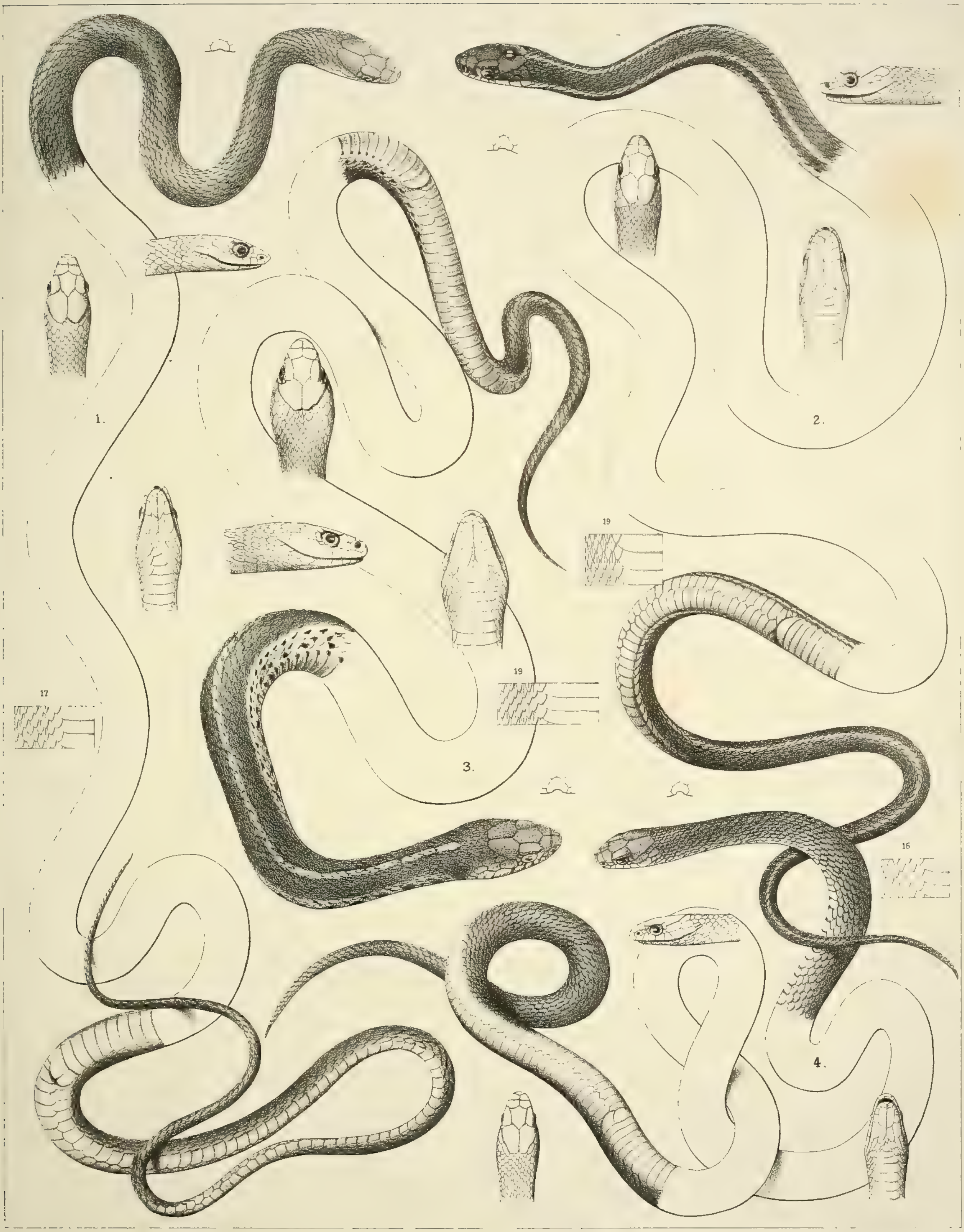
1. Regina leberis. 2. Diadophis punctatus.

3. Nerodia sipedon. 4. N. cyclopion.

Pl III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L. Trouvelot del

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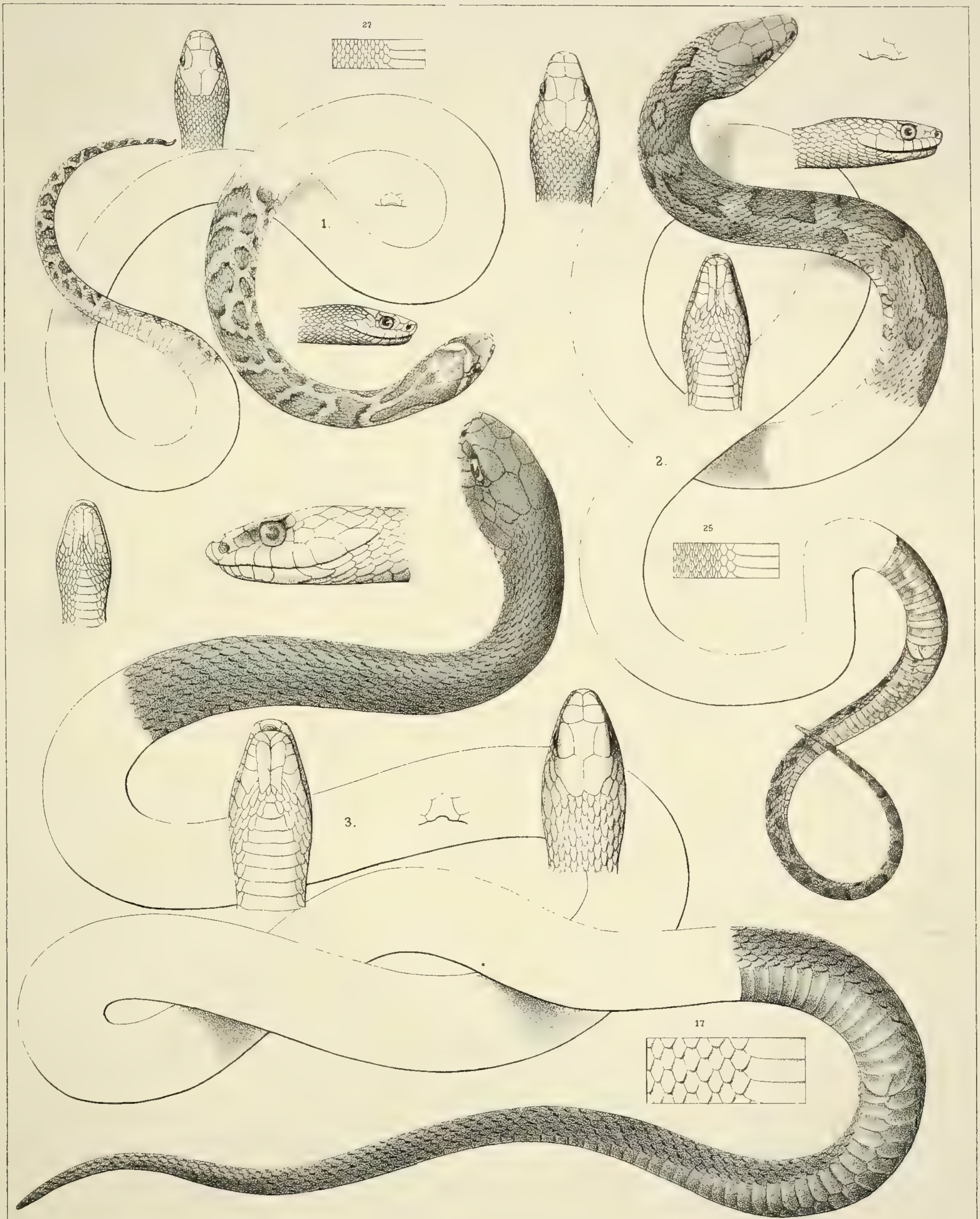
1. PHYLLOPHILOPHIS AESTIVUS. 2. EUTAENIA SAURITA.

3. E. SIRTALIS. 4. CYCLOPHIS VERNALIS.

Pl IV



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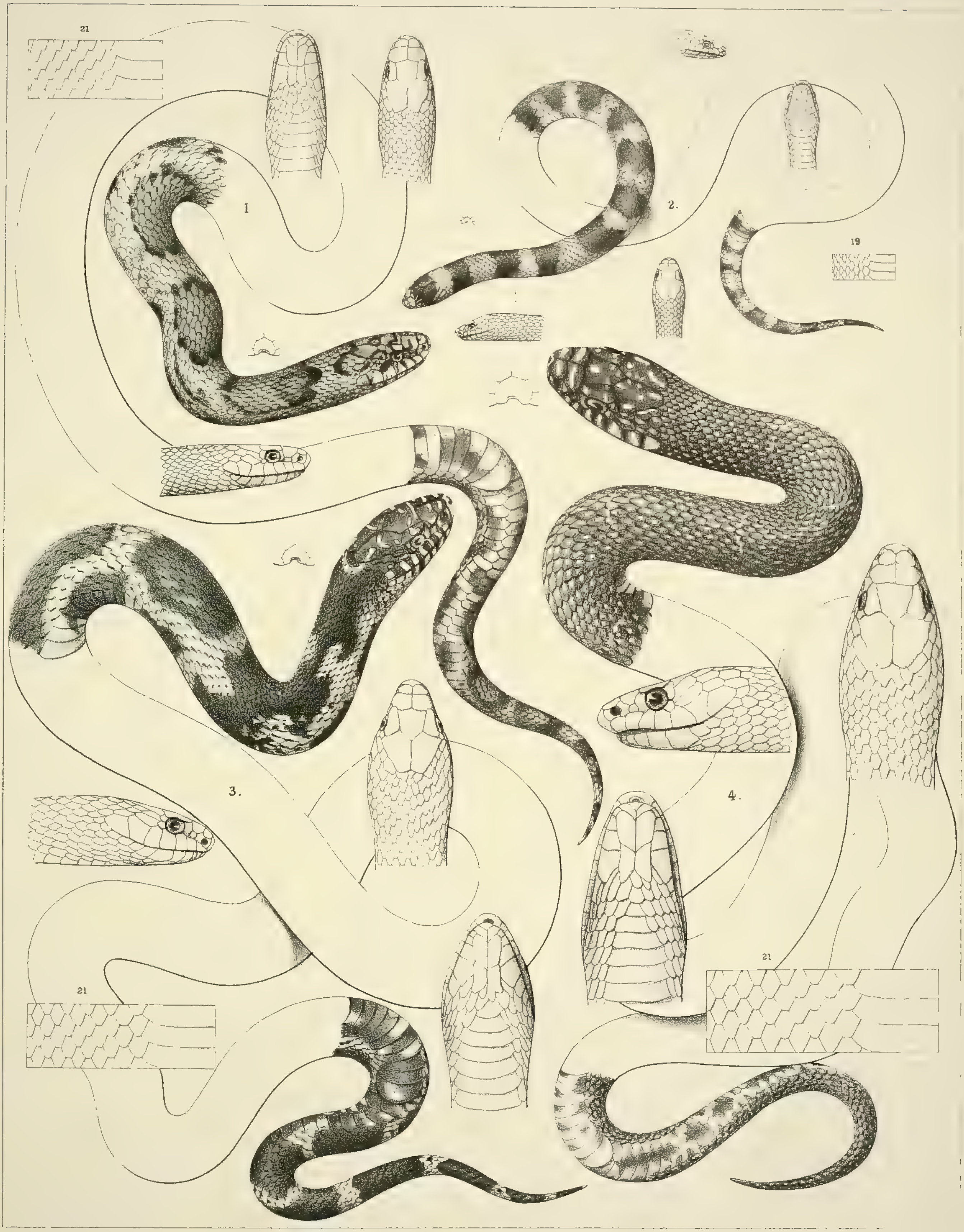
1. Elaphis guttatus. 2. Elaphis obsoletus.

3. Coluber constrictor.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21

L. Trouvelot del.

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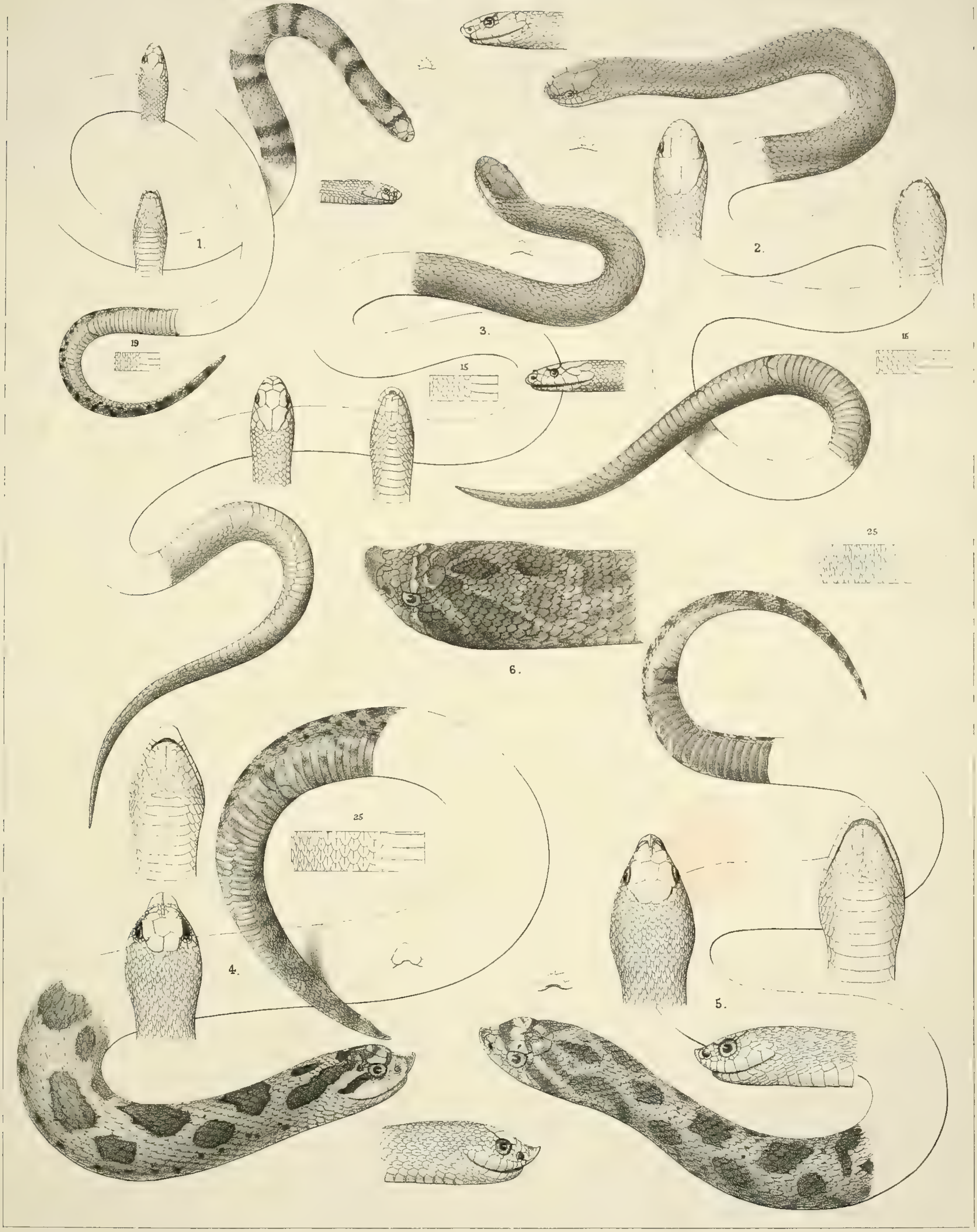
1. OPHIBOLUS TRIANGULUS. 2. O. DOLIATUS.

3. O. GETULUS. 4. O. SAYI.

Pl VI



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L. Trouvelot del

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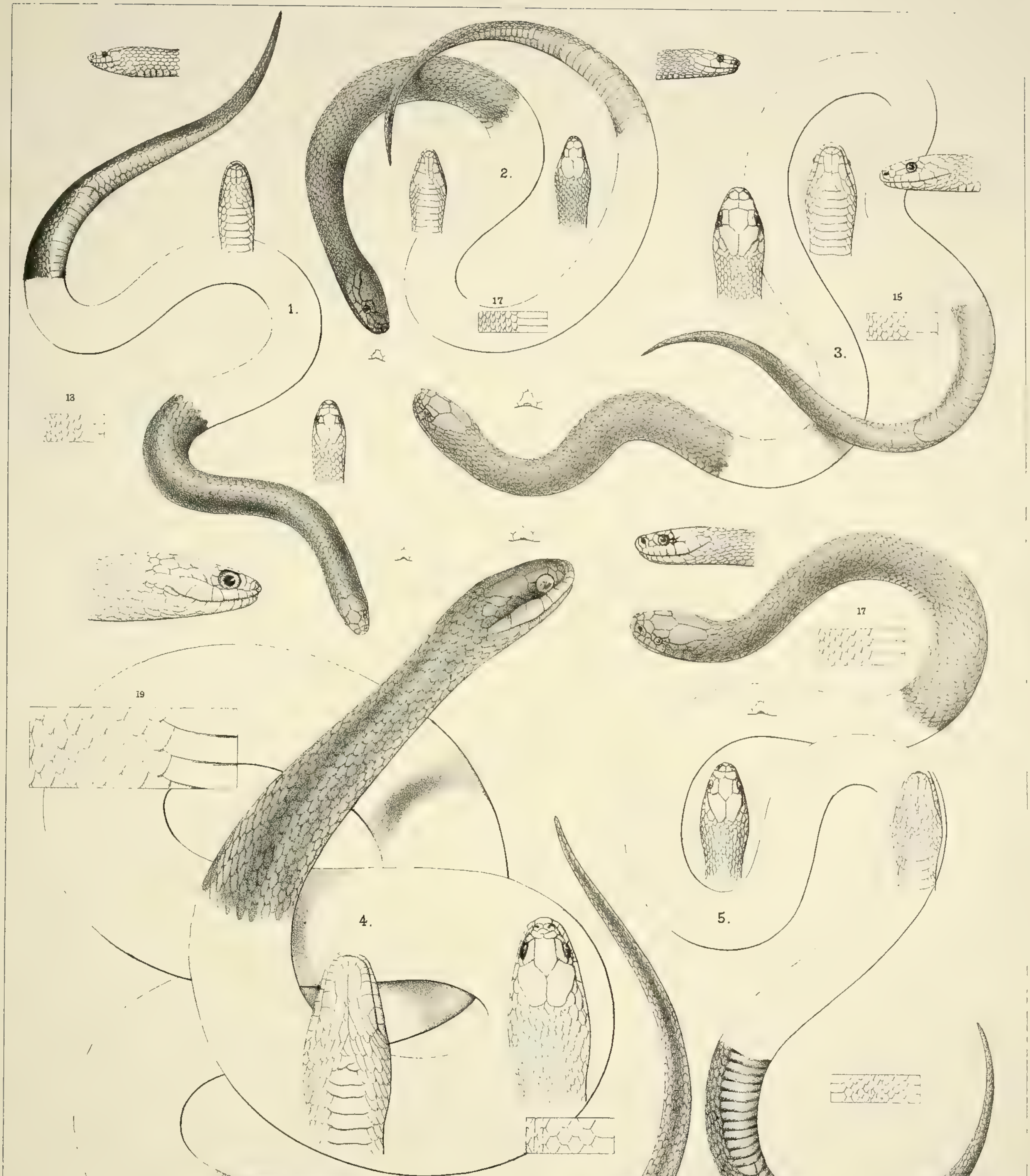
1. Cemophora coccinea, 2. Contia episcopa, 3. Tantilla gracilis,

4. Heterodon simus, 5. H. platyrhinus, 6. H. nasicus.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19
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5.

L. Trouvelot del

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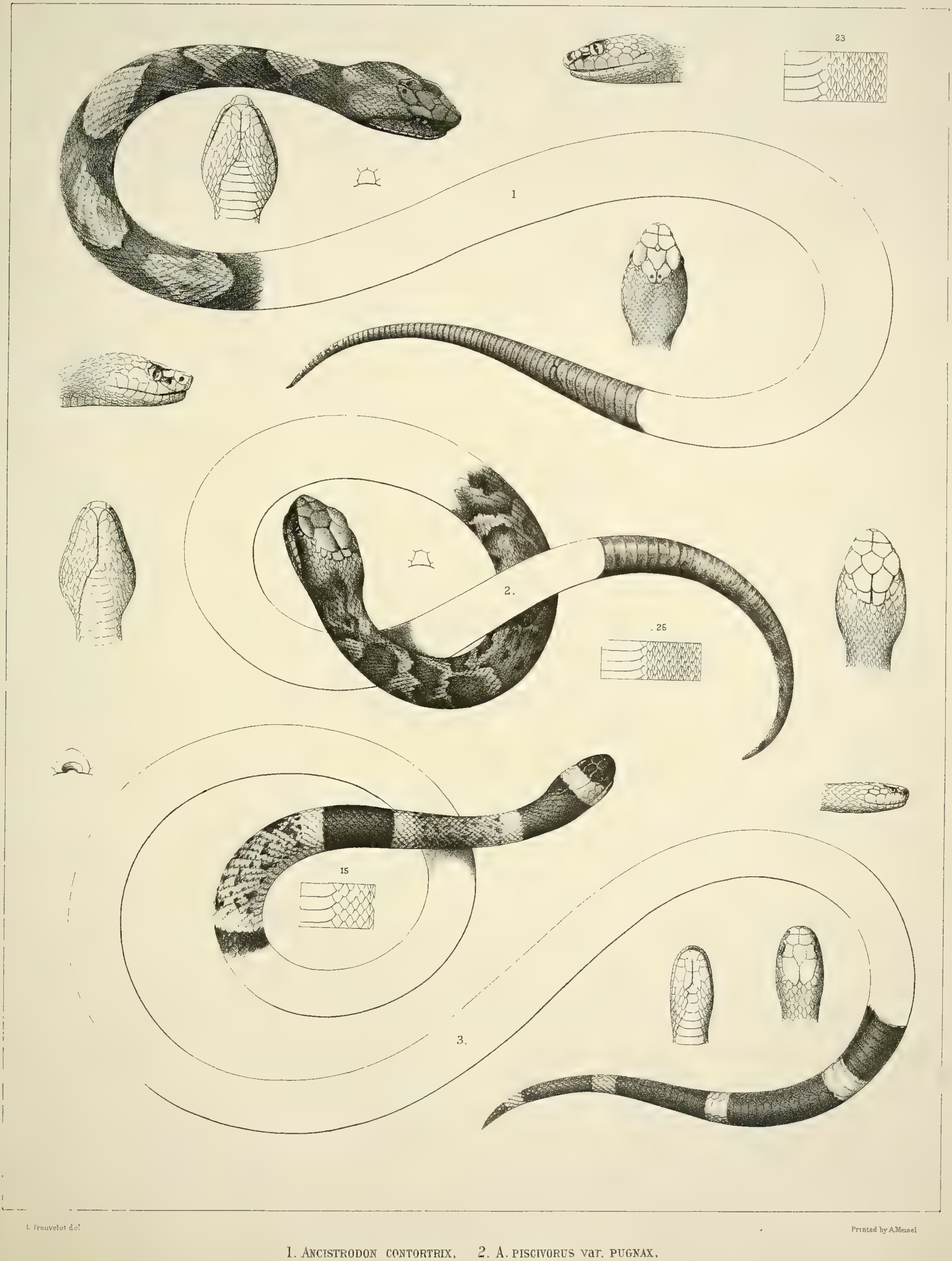
1. Carphophis amoena 2. Virginia striatula, 3. V. valeriae,

4. Helicops allenii 5. Contia pygaea.



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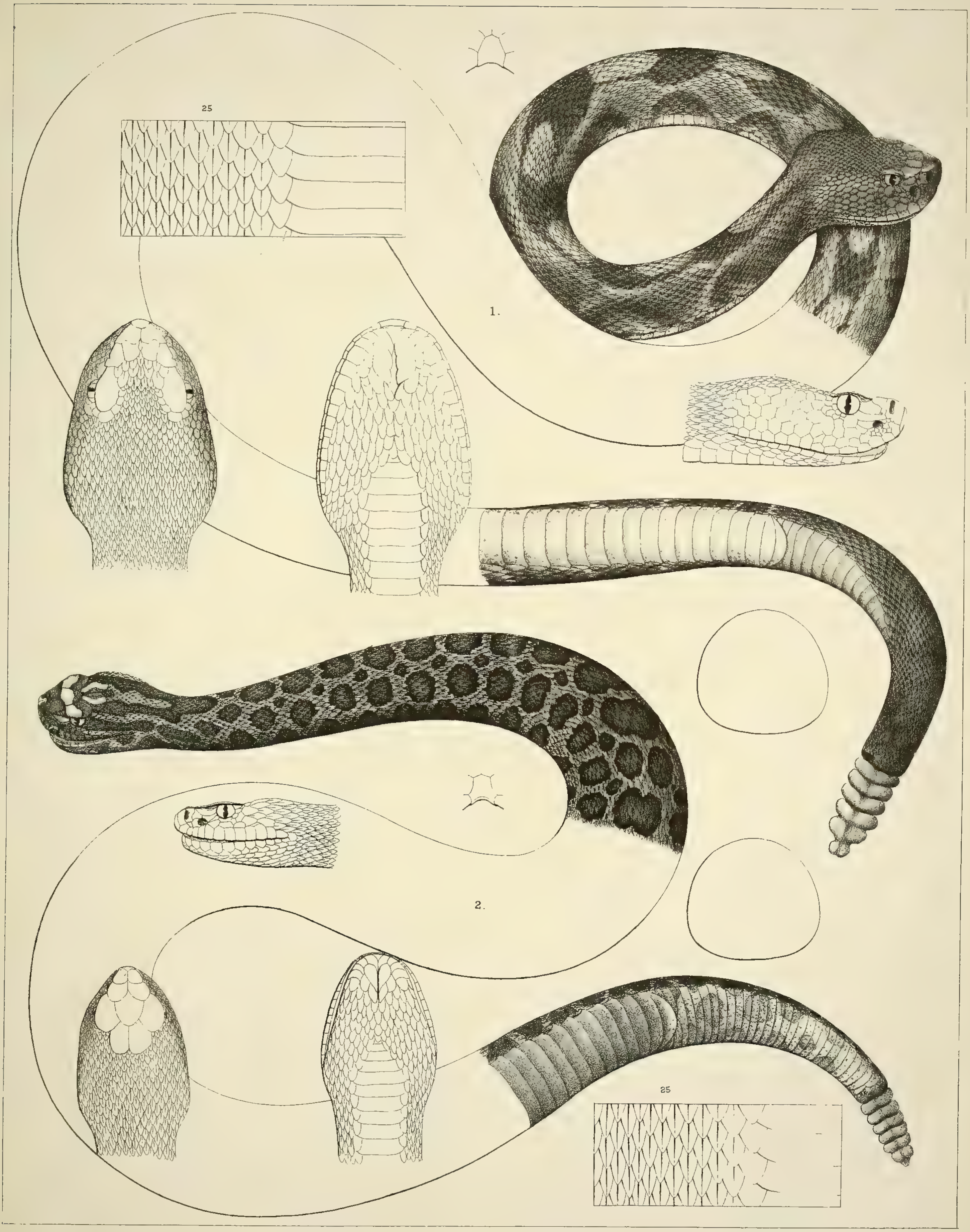
1. Ancistrodon contortrix, 2. A. piscivorus var. pugnax,

3. Elaps fulvius var. tener.



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1. CROTALUS HORRIDUS var. ATRICAUDATUS,

2. SISTRURUS CATENATUS.

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